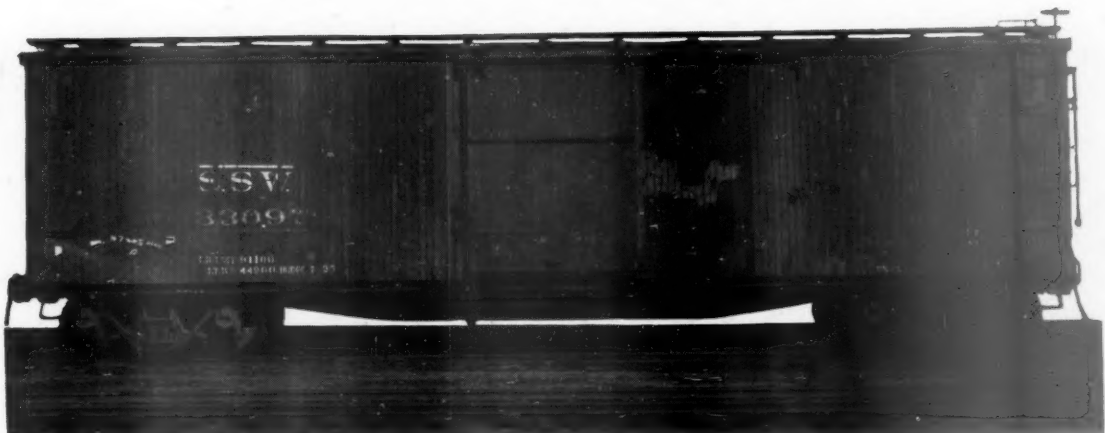


NOVEMBER 20, 1937

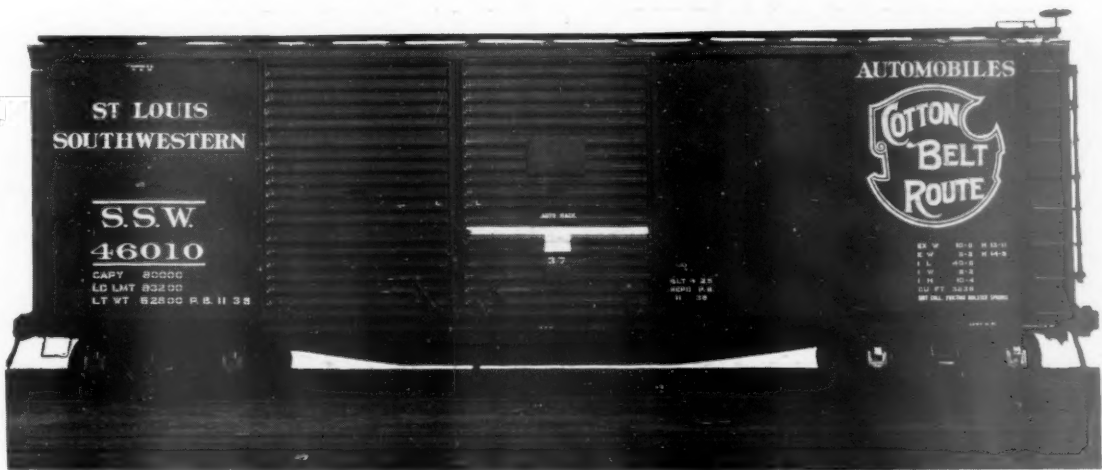
Railway Age

Founded in 1856

CONVERTED CARS
from **WOOD-SHEATHED BOX** of 1925



to **ALL-STEEL AUTOMOBILE** of 1937



by applying
YOUNGSTOWN STEEL SIDES

YOUNGSTOWN STEEL DOOR COMPANY

Cleveland

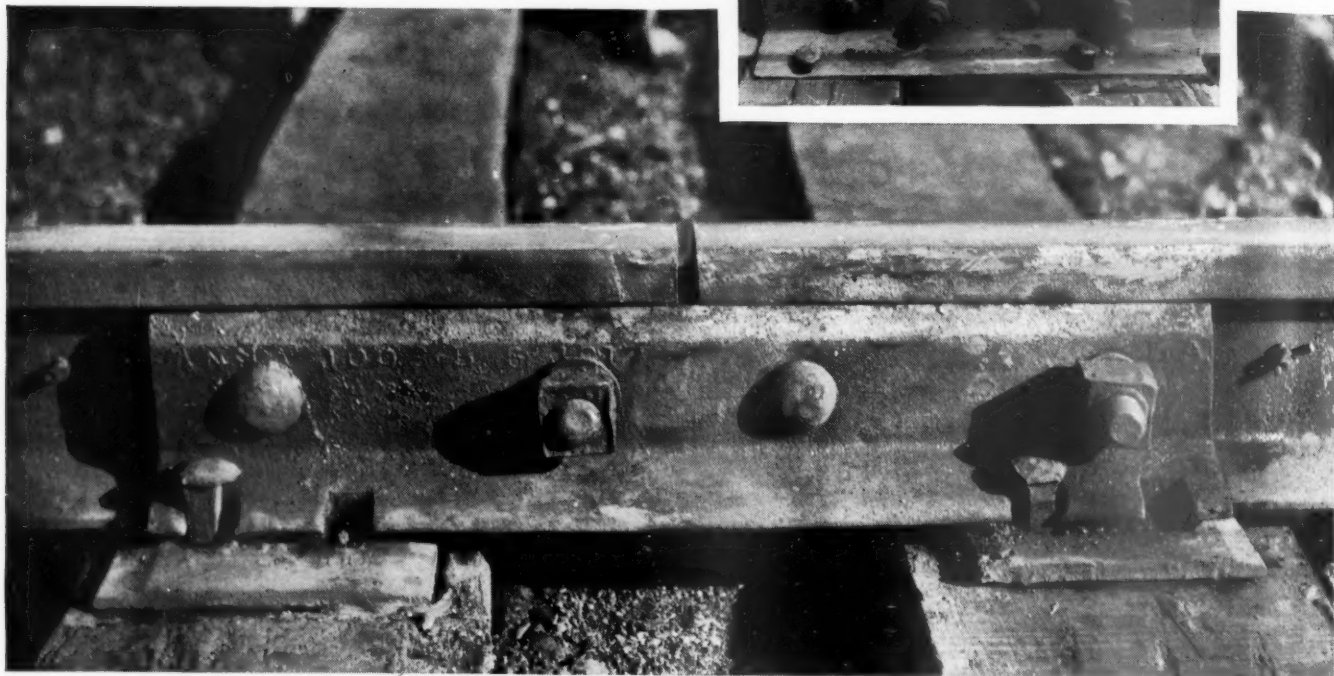
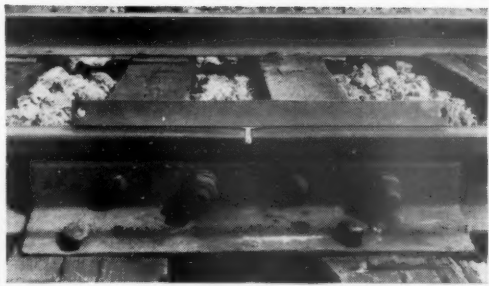
Chicago

New York

Youngstown

Right. Worn rail ends, shown under the straight-edge, accelerate depreciation of trackage and rolling stock.

Below. Rail ends are smooth and harder than the original rail when built up under standard procedures developed by Oxweld Railroad Service.



For Smooth Track .. rebuild worn rail ends

WEAR on locomotives, cars and track is greatly reduced when battered rail ends are built up by oxy-acetylene welding.

Oxweld engineers and instructors have cooperated in organizing and directing rail-end reconditioning on thousands of miles of track. The Oxweld oxy-acetylene procedures thus proved in practical use have greatly contributed to the speed and quality of the rail-conditioning projects done on Oxweld contract railroads. These procedures employ special welding rod and techniques developed by Oxweld's research facilities.

Far-sighted railroad officials can best realize the advantages obtainable from The Oxweld Railroad Service Company by reviewing its record of successful applications of the oxy-acetylene process to virtually every phase of railroad work.

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1912-1937

A QUARTER OF A CENTURY OF SERVICE
TO THE MAJORITY OF CLASS I RAILROADS

Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name registered U. S. Patent Office.

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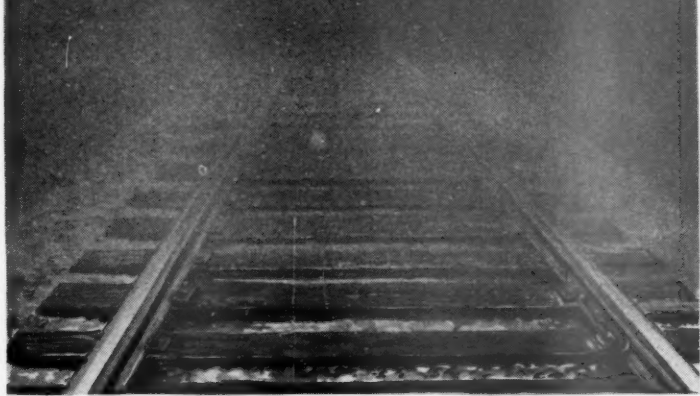
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Engineering Index Service



AN OPERATING PROBLEM



A single track line; train operation by time-table and train orders only; no automatic signals; territory frequently covered with dense fogs resulting in serious delays to traffic; expense of construction of second track not justified by volume of business available. » » » » » » » » » »

Such a situation was solved on one railroad by installation of "Union" Coded Continuous Cab Signals of the three-block indication type. Result: Safer operation; greater speed; an increase in track capacity sufficient indefinitely to postpone second tracking; maintenance of schedules; customer good-will; economy! » » » » »

If you have a similar situation, our nearest office will furnish details of this installation and the many benefits derived from "Union" Coded Continuous Cab Signals. » » » » » » » » » »

1333

1881

Union Switch & Signal Co.

1937

SWISSVALE, PA.

NEW YORK

MONTREAL

CHICAGO

ST. LOUIS

SAN FRANCISCO

The Week at a Glance

CARLOADINGS: In the November 6 week freight carloadings totaled 732 thousand, down 3.6 per cent under last year.

REVENUE: Reflecting in part the decrease in freight rates which the I.C.C. forced on the railroads the first of this year when prices of everything else were rising, October gross revenues were down almost 5 per cent under those of last year.

N. W. STEAM STREAMLINERS: Nine new passenger engines for the Chicago & North Western to be delivered in January will be of streamline construction and capable of speeds up to 120 m.p.h., and are expected to haul 15 cars at 80 m.p.h. with ease. The color will be "Pullman green," with decorative gold striping.

FORWARDERS' STATUS: The forwarders were given another "day in court" by the I.C.C. this week when re-arguments were begun on their status under the Motor Carrier Act. Division 5 of the I.C.C. decided this question as it related to Acme Fast Freight last July, but has now re-opened the case for re-argument before the whole commission.

C. & D. TRUCKERS: The railroads this week re-argued the "Scott Brothers' Case" before the I.C.C. and the gist of their contentions is given in the news pages herein. (In this case the Commission decided that contract truckers doing local pick-up and delivery for a railroad come under the Motor Carrier Act, but the roads think different—with the A.T.A. running true to form in its anti-railroad policy and contending that the railroad position is all wet.)

P. R. R. COAL DUMPER: A 4-million-dollar coal dumper, with related facilities, will be built by the Pennsylvania at Sandusky, increasing its facilities at that point by 50 per cent.

FLAT ROCK TERMINAL: A locomotive terminal of high construction standards and moderate size (to dispatch 28 engines in 24 hours) has recently been completed by the D. T. & I. and is described herein—a step in its program to provide more economical servicing of locomotives.

COLLECTIVISM CAUSES SLUMP:

The present business recession, and the failure of income and employment to regain 1929 levels, are an inevitable result of government policies which have caused capital to go on "strike"—the leading editorial herein points out. When dollars refuse to work, then there are no jobs for men fall off too. Government's penalizing of the invested dollar—taking all its earnings away in taxes and increased wages—is "collectivist," a policy which in its effects is more in line with Communist and Fascist doctrine than with traditional American Liberalism. The editorial shows the billions of added business and employ-

ment which would follow an abandonment of collectivist punishment of two depressed industries—railroads and housing—thus breaking the "strike" of capital in them.

COST "FINDING" AGAIN: Ex Parte 91, the lengthy and expensive I.C.C. inquiry of a few years ago into the possibilities of applying cost "accounting" to the railroads, has been called a prep school course in elementary accounting principles offered by the railroads for the education of Commissioner Eastman. But the pupil evidently was not very apt, and now he wants to be educated all over again, this time calling his course Ex Parte 122. The outline of what the scholar wants to learn, or rather claims he already knows, is presented in a short article herein, and in another article a learned professor of the subject presents a few of its A B C's by way of a preliminary.

LESS WEIGHT, LESS JOLTING:

The chief advantage of light weight passenger trains lies, not in their streamlining, but in the ease of starting them, in acceleration, and in moving up grades at speed—according to W. H. Mussey, Pullman-Standard Research Engineer, in a paper published herein. If all the 730-thousand box-cars in the country had 5 tons each knocked off their dead weight, the railroads would save the cost of handling 39 billion dead-head ton-miles yearly. You can't laugh that off, says Engineer Mussey.

I.C.C. PROBES TRUCK SIZE: The Interstate Commerce Commission has in several cases recently gone into court with the truckers to try to upset state laws limiting the size and weight of trucks; but only this week has it announced its intention of investigating as to what proper size and weight limits should be—which is all the authority it has under the law. In attacking state truck limit laws in the courts, the I.C.C. position would seem to be that no state has a right to legislate on a matter which is intrusted to the I.C.C. for investigation—a contention which strikes the lay mind as maybe a trifle bumptious.

SINKING FUND NO TONIC: The current impression that setting up sinking funds to retire debt would bail the roads out of their difficulties is hit in a report to the Investment Bankers' Association, high lights of which are given herein. The report shows that, even if no dividends were paid in prosperous years, debt retirement would be possible only at the expense of additions and betterments. Securing new funds by the sale of stock is the real answer to railroad financial difficulties, and this cannot be done without decent earnings. The achievement of the latter, in final analysis, is the railroad problem—and it cannot be escaped by sinking funds or any other financial device. You might fool a horse with sawdust feed, but he won't thrive on it.

ROBERTSON'S R. B. A. SPEECH:

Labor recognizes its responsibility "to assist in making the job of management more efficient and profitable"—so David B. Robertson of the B. of L. F. & E. told the R. B. A. in his address last Thursday evening, which is reported herein. Those are fair words, but we wish we could detect something—anything—in the actions of organized labor in recent months to indicate that such recognition by them meant action, and not phraseology alone. However, Mr. Robertson's plea for greater co-operation between management and labor contains much sound sense.

KOLBE QUILTS: Frank Kolbe has retired from the triumvirate in control of Alleghany Corporation but will remain a director.

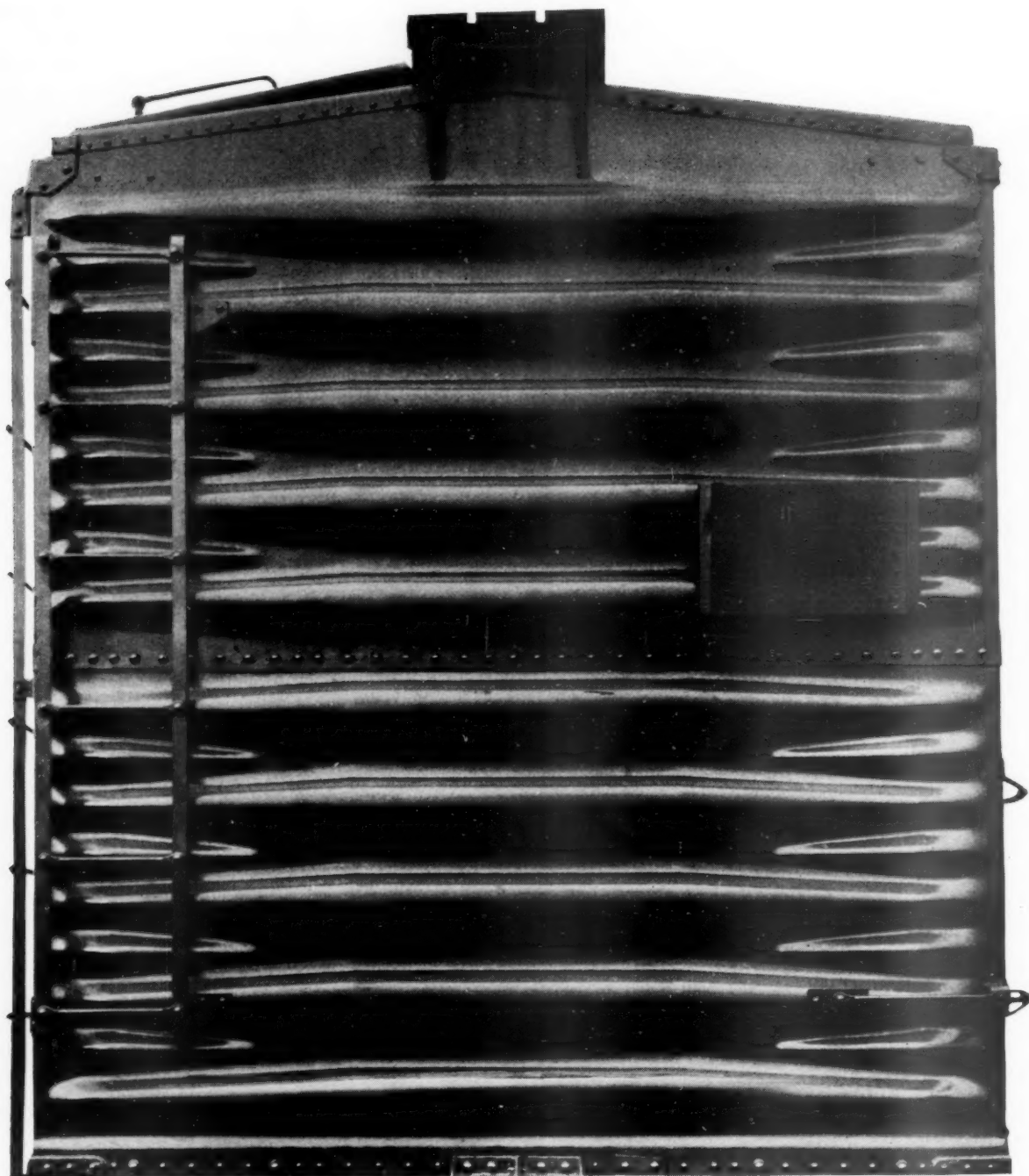
RATES AND PRICES: Railroad freight charges in 1936 averaged only 8.47 per cent of the value of commodities shipped by rail, according to a recent study by the I.C.C. Bureau of Statistics, indicating that a 15 per cent increase in freight rates would add only a little more than 1 per cent to the average selling price of commodities—even if all the rate increase were passed on to consumers. This is less than the daily fluctuation in price of many commodities.

NEW TYPE INTERLOCKER:

Knobs and buttons on a track diagram replace the familiar levers in an interlocking plant installed by the N. Y. C. near Erie, Pa., and described in an illustrated article elsewhere in this issue. This is the first installation of this type of interlocking in America and is based upon an entirely new conception—and a route can be set up with it more rapidly and with fewer manipulations than with any other system as yet designed.

WHAT DOES "77" MEAN?: The "field day" held this week by the I.C.C. on the meaning of Section 77 of the Bankruptcy Act brought to light a definite cleavage of opinion—one "school" holding that the clause requires "composition," to prevent equity holders from losing their holdings entirely by foreclosure. The opposing group maintains that the preferred position of creditors in a bankruptcy proceeding has not been changed by this clause. It looks as if a test case will have to go to the Supreme Court to decide the issue.

MOTOR ACT CHANGE: Commissioner Eastman, addressing the truckmen in Louisville this week, disclosed that the I.C.C. is going to ask Congress for some changes in the Motor Carrier Act. He didn't say what the proposed changes would be, but gave his "personal opinion" that the Commission ought to be able to act without hearings and without issuing proposed reports. He complimented the truckers, but with the reservation that, "There were snakes, even in the garden of Eden."



**THE RESILIENCY OF THE DREADNAUGHT END
HAS CONTRIBUTED MUCH IN REDUCING DAMAGE
CLAIMS TO BREAKABLE FREIGHT**

RAILWAY AGE

Collectivist Policies or Private Enterprise?

The great depression which began in this country eight years ago and reached its bottom in the summer of 1932, the subsequent complete failure of recovery, and the sharp recession of business that has occurred during the last six months, constitute a terrific indictment of the economic policies that have prevailed both before and during the depression.

Since the New Deal began four and one-half years ago there has been carried on a constant warfare between two schools of thought regarding governmental and business economic policies. The spokesmen of one school of thought have contended that the principal ultimate objective sought should be increase of the *production* both of consumers' goods and of the durable-capital goods required for producing and distributing consumers' goods, and that government economic policies should aim solely at encouraging larger production and better distribution of goods by *private investment of capital and private enterprise*. The spokesmen of the other school of thought have contended that the principal ultimate objective should be a radical change in the *distribution* of the national income to increase the ability of the lower income classes to buy consumers' goods, and that this objective should be sought by *government* planning and direction of all production and distribution. The economic philosophy of the former school of thought is that of old-fashioned liberalism, which usually prevailed in both government and business in this country prior to the Great War. The economic philosophy of the latter school of thought is that of collectivism, which has been given full effect in Russia under Communism and in Germany and Italy under Fascism, and to which a Socialistic government is trying to give full effect in France.

National Income Has Never Been Restored

The advocates of collectivist policies have prevailed during the last four and one-half years in the United States. Their policies have been largely adopted here by government, and also by labor under the encouragement, and by business under the influence and coercion, of government. The results are plain enough

to those who are willing to accept facts and face them. There has not been even for any short period a full restoration of national income and production, and for six months there has been occurring a recession of business that has been reducing them.

The National Bureau of Economic Research recently has published a study of national income in the United States in the years 1919 to 1935, inclusive. It has equated its figures on the basis of 1929 prices of commodities in order to make them comparable for all these years. It has concluded that, on the basis of 1929 prices, average income produced per capita was as follows: 1919, \$538; 1920, \$559; 1921, \$511; 1922, \$552; 1923, \$620; 1924, \$616; 1925, \$633; 1926, \$655; 1927, \$643; 1928, \$669; 1929, \$689; 1930, \$609; 1931, \$506; 1932, \$389; 1933, \$407; 1934, \$472; 1935, \$501. Railroad freight loadings probably afford the best single measure of subsequent increases. They indicate that in 1936 the income produced per capita was about \$573 and in 1937 will be about \$605. These figures apparently substantiate a contention heretofore made by the *Railway Age*—viz., that the total national income produced has never been in *any year* during the period of so-called "recovery" as large as it was in *every year* between 1922 and 1931.

Recovery from every previous depression meant restoration of production and the national income to a level at least as high as before the depression. The national income per capita in 1937 would have to be about 15 per cent larger than it apparently will be in order to equal that of 1929. It is eight years since the panic of 1929 that started the present depression. Eight years after the panic of 1893 the freight traffic of the railways was 57 per cent larger than in 1893. Railroad freight loadings in the first ten months of 1937 were 28 per cent smaller than in 1929.

Opposing Economic Policies

The economic policies of government and business that prevailed before 1933 are plainly open to the criticism that they caused, or at least did not prevent, more than three years of this depression; but at the same time they can be defended on the ground that

they did cause the national income to increase, or at least did not prevent it from steadily increasing, from \$511 per capita in the depression year 1921 to \$689 in 1929, or 35 per cent. May it be contended with equal logic that the economic policies that have prevailed since 1932 have caused the national income to increase from \$389 per capita in 1932 to about \$605 in 1937? Or, in view of the rapidity with which recovery after all previous depressions raised production and the national income to levels never previously attained, may it not, with much more logic, be contended that the policies prevailing since 1932 have prevented the national income from increasing to as much as it was from 1923 to 1929 or to anywhere near as much as it would have become excepting for these policies?

There is, in our opinion, only one answer that can reasonably be made to these questions. In view of all previous experience the national income per capita should have increased much more than it has since the bottom of the depression; it should now be substantially larger than it was in any year preceding the depression; and it should still be increasing instead of declining. The unprecedented failure of recovery that has occurred, and the recent recession of business, cannot reasonably be attributed to any cause or causes excepting the unprecedented policies of government and business that have prevailed during recent years that should have been, but that have fallen far short of being, a period of unprecedented business expansion.

In trying to identify the retarding influences, it is desirable first to identify the industries in which there has been the least recovery. It is easy to identify some of them.

Residential Construction An Example

The residential construction industry—the so-called “housing” industry—has recently been under scrutiny by persons prominent in government and business who are trying to determine the causes of the present business recession. The National Bureau of Economic Research recently has made the most thorough study in history of non-farm residential construction. It estimates that in the seven years 1923-1929, inclusive, expenditures for this kind of construction ranged from \$4,754,000,000 in 1925 to \$2,623,000,000 in 1929, and averaged \$3,968,000,000 annually. It also estimates that in the seven years, 1930-1936, inclusive, they ranged from \$1,456,000,000 in 1930 to \$204,000,000 in 1933; that during this period they averaged only \$707,000,000 annually, and that in 1936 they had increased to only \$1,202,000,000.

Residential construction increased during the first seven months of 1937, but has since been less than in 1936; and its recent decline has been one of the principal causes of the recession in business in general. Its increase to the level of the years 1923-1929 would directly increase the country's volume of business at

least \$2,500,000,000 annually, and would directly and indirectly increase it much more than this.

Why the Lag in Building?

Why has residential construction never increased to the pre-depression level? Why has it recently declined? There is a shortage of housing in almost every community in the country. There are ample capital and credit for financing a huge increase of expenditure on housing if those desiring to build were able and disposed to utilize this capital and credit. About one-half of residential buildings are erected by their owners for their own occupancy and the other half by investors to rent. Why are not either those who desire to own and occupy them, or those who desire to own and rent them, building enough of them? It is replied that building costs have become too high. If so, who or what has caused them to become too high? The cost of building consists mainly of the labor costs of building materials, of the wages of the labor employed in the actual construction, and of taxes. Has not the federal government, ably aided by labor union leaders, for more than four years encouraged and demanded reductions of working hours and advances in hourly wages that have increased labor costs in the building and every other industry and increased taxation of every kind of business?

They are now calling upon private enterprise to revive housing construction. Private enterprise invests capital solely to secure profits. Whether profits can be derived from building depends upon (1) the cost of erecting and owning buildings and (2) their rental value. Every step that the federal, state and local governments have taken in increasing labor costs and taxes has retarded the increase in housing construction that the federal government is now urging private enterprise to undertake.

Housing, Railroads and Public Utilities

Take the case of the railways. Their purchases from the manufacturing industry are determined by the amount of net operating income they earn, and before the depression amounted to about \$1,500,000,000 annually. They declined in 1932 and 1933 to an annual average of about \$270,000,000. They increased in 1936 to about \$760,000,000 and in the first eight months of 1937 to about 35 per cent more than this. Meantime, however, the government through the Interstate Commerce Commission reduced railway rates. It encouraged and demanded advances in wages and prices in other industries that have greatly increased the cost of railway equipment, materials and fuel. Largely due to the government's more or less coercive policies the railways, within the last year, have made large advances in wages. Because of other government policies they are suffering from large increases in their taxes. The results are that there has been a severe

decline of net operating income and that there must be a large advance in railway rates or there will be a continuance of the drastic curtailment of railway purchases that recently has occurred.

A full revival of residential construction would directly increase the country's business by about two and one-half billion dollars annually. A full revival of railroad buying would directly increase it by about one billion dollars annually. These direct increases of three and one-half billion dollars in general business due to recovery in only two important industries, and the indirect increases in general business they would cause, would change the trend of all business from downward to upward and make a huge contribution toward complete recovery.

If, in addition, the public utility industry, relieved from fear of destructive government regulation and competition, should release all the expenditures it would like to make, the nation would soon be in the midst of a boom instead of being faced with a decline in general business.

Recovery Failing Because Capital is "Striking"

The indisputable record of the failure of recovery and the recent recession in business demonstrates that the collectivist economic policies of the last four and one-half years, and those who have advocated them and secured their adoption, have been wrong; and that those who have opposed them and advocated encouragement of private enterprise by policies of economic liberalism affording a reasonable expectation of legitimate profits from legitimate investment, have been right. The policies that have been followed may have changed the *distribution* of the national income; but they have injured a large majority of the people by preventing the *increases* of production and the national income that should have occurred. The way to revive production and cause complete recovery and prosperity is to establish confidence in business and among investors. The only confidence in business and among investors that is worth anything whatever is *confidence in future profits based on present profits*

and an upward trend in business caused by present profits.

Complete recovery and real prosperity will be achieved when, and only when, there has been frank and full acceptance of the fact that capital, as well as labor can strike; that the failure of recovery and the present business situation are due to a strike of capital; that all the labor of the country cannot be put to work until all its capital has been put to work; and that the abundant capital available will go to work and help to restore prosperity only when it has been convinced, not by kind and appealing words, but by actual changes in policies, that it will be fairly and reasonably compensated.

Government or Business Responsible?

In his message to Congress on Monday, President Roosevelt said, "Over a month ago I quoted one of the country's leading economists to this effect—that the continuance of business recovery in the United States depends far more upon business policies than it does upon anything that may be done or not done in Washington." This statement, made during a business recession, is in striking contrast to the President's widely quoted declaration when business was improving. "We planned it that way, and don't let anybody tell you otherwise." To claim credit for what is done in Washington for business improvement, and "pass the buck" to business policies when business is declining, may be good politics, but it is mighty poor economics, and contributes a great deal less than nothing toward removing the causes of the present business recession.

What has been done in Washington necessarily has not only largely determined business policies, which has been its purpose, but has also largely determined the costs and profits of business. To claim credit for government economic policies when business is improving, and blame policies of private enterprise when business is declining, is simply to argue for continuance and increase of the collectivist policies of government that are mainly responsible for the failure of recovery and for the recent business recession.

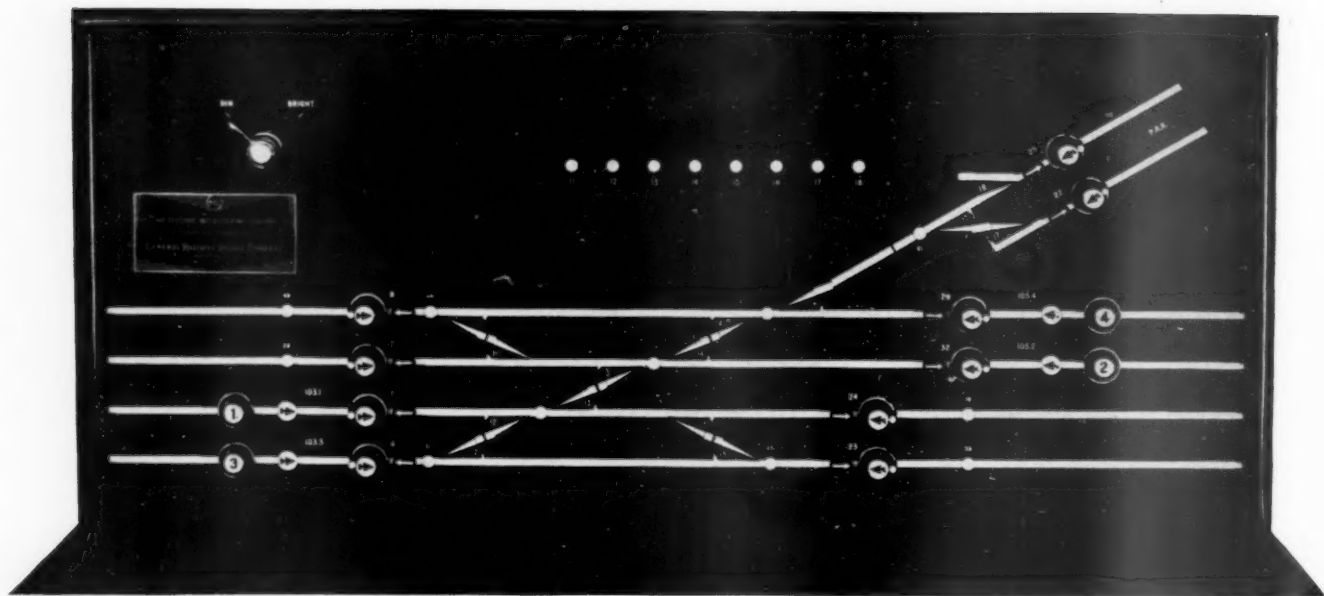
A Labor Expert on Union Policy

Union policy is part of the prevailing economic policy of restriction, price fixing and inflexibility—in short, the policy of stabilization by fiat. The capacity of business to use its judgment and to adjust business policy to the requirements of changing conditions is being more and more restricted. In a country to which monopoly has always been abhorrent the trend toward monopoly and monopolistic practices has been accelerated by government and union policy, not to speak of the policy of business itself. Policies of this sort may succeed in raising standards of living in some industries and among some groups of labor, but it is calculated to do great and irreparable damage to the average standards of the whole population.

—From an Article by Dr. Leo Wolman in the *New York Times Annalist*.

Current labor policy, private and public, has probably already had serious effects on the long-run prospects for employment and earnings. Prevailing standards of work and wages will be hard to sustain except under conditions of capacity production or rising prices, or both. These conditions are plainly not easy to achieve in an atmosphere of general uncertainty as to the future of all economic policy. . . .

In the experience of the railroad, coal mining, clothing and building industries, in which, until recently, the overwhelming majority of American trade unionists were concentrated, there is little to support current faith in union doctrine and practice.



New Route Type Control Machine

N. Y. C. Installs First Button-Control Route Interlocking

New machine provides simplicity and facility of operation at plants where routes must be changed quickly and where a complicated route network exists

ON September 23, the New York Central placed in service at Girard Junction, near Erie, Pa., the first installation in America of a new type of interlocking control, in which the switches in a route and the signal for directing a train movement over that route are all controlled by the operation of a knob and a button on a track model which is a part of the control panel. The knob is located on the line representing the track at a point corresponding with the location of the signal where the train will enter the plant; hence it is called an entrance knob. The button is located at the point where the train is to leave the plant; hence it is called an exit button. Thus, the operator does not think of a route in terms of individual switch and signal levers, but rather as having an entrance and an exit. The control for a complete route, involving as many as four crossovers, two single switches, and a derail, can be completed and the signal cleared in approximately nine seconds after the operator pushes the exit button. The advantages of such rapid operation in a busy terminal plant, requiring numerous changes in routes, are readily apparent.

Unit as Compared with Route Control

For many years, both in this country and abroad, some signal engineers have favored interlocking machines on which levers controlled one or more *interlocking units*, while others have favored machines where levers have

controlled *routes*. In some European countries the route-lever system is widely used, but in the United States the control of interlocking units by levers predominates, chiefly because of greater simplicity, ease in correcting trouble, and further because in many track layouts more levers would be used for route control than for interlocking unit control. The new "NX" (route control) system is an entirely new conception. It is based on the theory that all routes have an entrance and exit. It combines the desirable features of the two systems, in that a route can be set up more rapidly and with fewer manipulations than in any interlocking system heretofore designed.

Location of Plant

The new plant at Girard Junction is located on the New York-Chicago main line at a point 17 miles west of Erie, Pa. Throughout the Erie division, the New York Central has four main running tracks. At Girard Junction there is a junction between the New York Central and a single-track main line of the Pennsylvania, which extends south to Pittsburgh, Pa., via New Castle, Pa., the Pennsylvania using the New York Central tracks between Girard Junction and Erie. The average daily traffic through this plant includes about 50 passenger trains and 50 freight trains on the New York Central, and 2 passenger trains and 20 freight trains on the Pennsylvania. Extra passenger trains and

freight trains are operated as required, so that the total train movements through Girard Junction average from 125 to 150 daily.

Changes Made at This Time

The track layout at Girard Junction includes 5 cross-overs between main tracks of the New York Central, 2 single switches, and 2 derails on the Pennsylvania, and a total of 10 signals. This plant was formerly controlled by a conventional lever-type electric interlocking machine with a 32-lever frame, including 30 working levers. This machine was one of the early pistol-grip type, and, as it had been in service at this busy plant since August 17, 1906, the parts were worn to the extent that replacement of the entire machine was necessary. The only change made in the 1937 improvement was to replace the old electric interlocking machine with the new control machine. The switch machines, signals, power battery, and all wiring distribution outside the tower were continued in service without change.

The control system and button-type machine installed at Girard Junction were designed and manufactured by the General Railway Signal Company, this company adopting the name NX as descriptive of its system of route control, the name being derived from the two words "entrance" and "exit."

The new control machine is made up in the form of a cabinet, the control panel being 13 in. high and 29

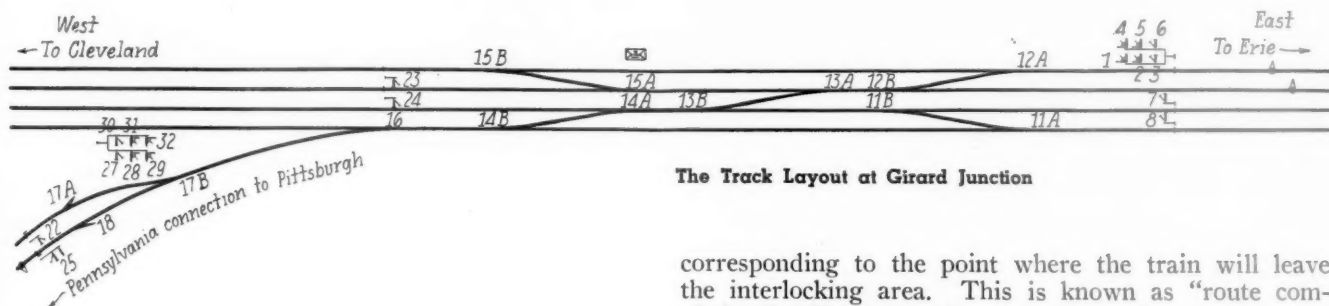
in. long. The track model on the face of this panel represents all the track sections, switches, and signals in the interlocking. The white lines representing the track are $\frac{3}{16}$ in. wide, and stand out in contrast with the dull black face of the panel. The switches and cross-overs are represented by small, movable sections of the track called route indicators, which outline the route immediately after the operator pushes an exit button. A small lamp with a red lens, mounted behind the track lines, is located adjacent to each movable route indicator, and each such lamp is lighted when its corresponding switch in the field is locked and not free to be moved. Thus these lamps are known as "lock lights." Small track occupancy lamps, mounted in the section representing each track circuit, are normally extinguished, but are illuminated when a train occupies the corresponding track section.

In the line representing the track, at the location corresponding to each interlocking signal, there is an entrance knob. Each of these knobs is $\frac{3}{4}$ in. in diameter and stands out 1 in. from the face of the panel. The knob is hollow and surrounds a separate support for a round disk of translucent glass with a black arrow, which fits in the face of the knob. The arrow points in the direction in which the corresponding signal controls, and maintains this position regardless of whether the knob is turned. The lamp behind the arrow is il-

Operation of Machine

luminated when the route is complete and the signal clears. A small round white marker on the outer rim of the knob indicates its position, this marker normally being in line with the track and at the base of the arrow in the face of the knob. When lining up the route, the knob is turned to bring the white marker to the top when clearing a high-speed signal for a through-route or a medium-speed signal for a diverging-route. The knob is turned to bring the white marker to the bottom when clearing a low-speed or call-on signal.

An exit button is mounted in the line representing each track at the place where the train leaves the controlled area. Each exit button is $\frac{9}{16}$ in. in diameter, and normally stands out from the panel $\frac{5}{16}$ in. A white arrow on the face of each button points in the direction a train is going when leaving the end of a route controlled by the respective button. When lining up a route, the exit button is pushed in and it then returns to its normal position by spring action. An annunciator system, including bells and indicator lights, informs the operator of the approach of trains.



The Track Layout at Girard Junction

luminated when the route is complete and the signal clears. This is known as "route completion." This operation completed, the system automatically lines up the route. First, the route indicators, on the control panel, line up, showing the route that was called for; then the switches in the field operate into the positions required by the route. Next the signal clears in the field, and, on the control panel, the small red lock lights appear at the points of their associated route indicators, indicating those switches which are locked up. A light illuminates the arrow in the entrance knob, showing that the signal has cleared and that the route is ready. As the train accepts the signal and travels over the route, the track-occupancy lamps on the panel in the route are illuminated to indicate the movement of the train. The light in the entrance knob is extinguished as the home signal goes to stop. As the train passes through the plant and the route is released, the small red lock lights disappear.

If the operator wishes to hold the route, he leaves the entrance knob in the same position, and the home signal automatically clears for a following train. If he wishes to set up a new route, he turns the entrance knob back to normal and lines up the new route in the usual way. The facility of holding the same route for a succession of trains has its value at Girard Junction, where there are numerous through-movements on the New York Central main line. However, the system can be made to provide automatic route restoration by the train, in which case the operator pushes the entrance knob instead of turning it when lining up the route.

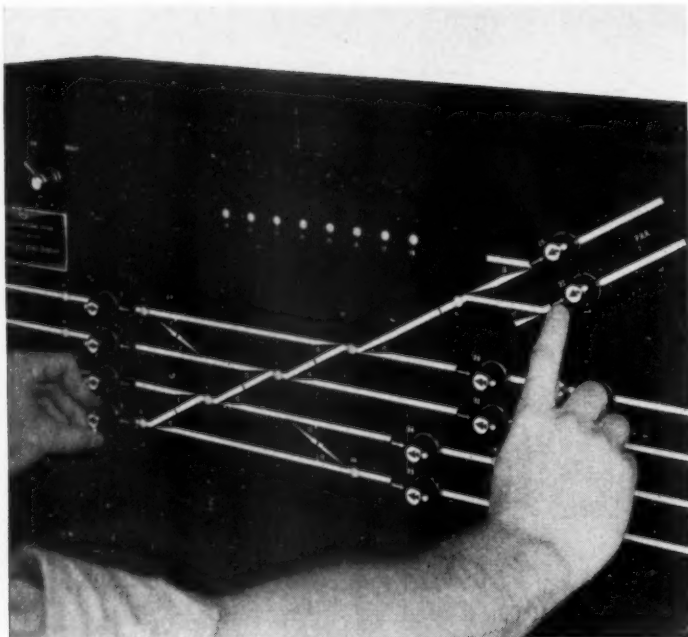


Illustration of the Methods of Machine Operation

Moreover, the option of manual or automatic route restoration can be obtained with the one type of entrance knob and either or both may be used as operating conditions require.

Since the setting up of a route requires that the operator know only the entrance and exit of a route, the operation of the plant is simple, no manipulation charts or diagrams being required. An important point is that an operator newly assigned to this plant can readily learn how to handle the control machine without an extended period of instruction.

With the new control machine, the Girard Junction plant can be operated much faster in changing routes than was formerly possible. With the conventional type of electric interlocking, when operating a switch, the lever was moved into the indication position and the operator then had to wait until the switch machine operated and locked up, at which time the indication lock on the lever was released to permit final movement of the lever. The total time required for the operation of each lever was from four to six seconds. In lining up a route involving several switches, the operator usually placed all the levers over to the indication point and then went back to each lever to complete its operation; therefore, the total time was somewhat less than six seconds multiplied by the number of levers operated. Each crossover, single switch, and derail was controlled by a separate switch lever. For example, when routing a train from track 3 on the New York Central to the passing track on the Pennsylvania, a total of 5 switch and derail levers and 1 signal lever were operated, requiring about 30 seconds of the operator's time to line up the route. In contrast, with the new NX system, the operator can line up this route in about nine seconds from the time he turns the entrance knob and pushes the exit button until all the switches in the route operate into correspondence and the signal clears. This means a saving of about 21 seconds in time for completing the route and clearing the signal. Thus, in an instance when two trains on close time are approaching the plant, a delay or a stop to one train or the other is frequently obviated by the NX control machine.

When maintaining and adjusting switch points and switch machines, it is desirable to have individual con-

trol rather than route control, which forms a part of the NX system. For this reason, a separate test key is provided for each switch, these keys being mounted in a row along the top of the control panel. When in the center position, these keys are disassociated with, and have no effect on, the normal operation of the plant. When a maintainer wants to test a switch, however, the operator must first cancel any route set up over the switch and then manipulate the corresponding test key *down* to place the switch normal, and *up* for reverse. A small lamp below each test key is lighted whenever the key is moved into a position out of correspondence with the position of the switch in the field. This lamp stays lighted until the switch is over and locked in the position corresponding to that of the key. These small lamps also light whenever a switch is out of correspondence with the position called for by the route lined up on the control panel. Therefore, if the operator sees that one of these lamps remains illuminated, he knows that the switch has failed to complete its stroke and lock up. In addition to being used for test purposes, the test keys can be used at any time that a switch fails to operate properly in the normal procedure. For example, if the switch points are obstructed by snow, the operator can throw any switch back and forth by manipulating the test key, thereby smashing the obstruction and permitting the switch to complete its movement and lock up. He can then revert to the use of the normal control, which automatically cuts out the test key. An important point is that movement of the test keys is ineffective when any route is established by normal control; and that if a test key is operated, a route can be set up over its corresponding switch, but only in the position already called for by the test key.

First Installation in America

This installation at Girard Junction on the New York Central was the first installation of button-control route interlocking in the United States, although an installation of the same NX type of equipment, manufactured by the General Railway Signal Company, Limited, of London, England, was placed in service on the Cheshire Lines at



Eastbound Train Passing Signal 29

Brunswick, England, on February 28, 1937, this being the first installation of its kind in the world.

The control of this NX type route interlocking system is accomplished by inter-connection of circuits, no mechanical locking between knobs and buttons and no electric lever locks being used. Complete protection is provided to insure that a route is properly established and that no conflicting route can be established. The circuits are arranged to provide approach, route, and detector locking according to modern practices. The circuits are all of the direct-wire type, no coded equipment being involved.

The installation of the new interlocking control was carried out by the signal forces of the New York Central, under the jurisdiction of F. B. Wiegand, signal engineer, and under the supervision of H. D. Abernathy, assistant signal engineer, and L. L. Whitcomb, supervisor of signals. The major items of material for this interlocking, including the control machine and new relays, were furnished by the General Railway Signal Company.

Freight Revenues and Commodity Values

WASHINGTON, D. C.

RAILROAD freight revenues in 1936 averaged only 8.47 per cent of the total value at destination of all commodities carried, according to a study issued by the Interstate Commerce Commission's Bureau of Statistics. This percentage is derived from the \$40.48 billions estimated total value of commodities shipped in 1936 and last year's freight charges of \$3.43 billions; it compares with a 1933 figure of 10.66 per cent, based on a total value of \$24.2 billions and freight charges of \$2.58 billions, and with 1930's 6.77 per cent derived from a total value of \$63.09 billions and freight charges of \$4.21 billions.

In addition to its tabulations showing, for each of the 157 commodity classifications, the tonnage originated by Class I roads, the total freight revenue, the freight revenue per ton, the value per ton at destination and the per cent freight revenue of value at destination, the study includes an introductory statement by Dr. M. O. Lorenz, director of the Bureau of Statistics. The data were collected and compiled under the direction of Edward Crane, a statistical analyst of the Bureau.

Dr. Lorenz says that the statement was compiled "because of the interest manifested in similar statistics previously issued." After explaining sources of the data he goes on to reiterate warnings of previous statements of this character to the effect that "the figures do not show nor are they intended to show whether freight rates are too high or too low."

"Freight rates," he adds, "are not proportionate to the value of commodities. To make them so would produce exorbitant rates in many instances, although it is true that the more valuable finished products usually are made to bear higher rates than the lower valued raw products."

"If freight rates were based on commodity values alone, the information given in this statement would still be inadequate to prove whether the freight charges were proper for various reasons; nevertheless, it may be said that the ratios of freight revenue to the value of the commodities shown do throw some light on the value of service, although they have no bearing on the cost of transportation service. Notwithstanding its limitations, a statement of this kind is found convenient to have avail-

able in discussions of freight rates and other economic problems. It indicates in a general way the importance of freight rates as a factor in affecting financial returns in individual industries. The information given has been found helpful in making a comparison of the character and value of freight transported by railways with that moved by other agencies of transportation. It is of interest to know that the total freight burden is only 8.47 per cent of the total value of the commodities carried. The statement also provides a convenient reference for commodity values in tons of 2,000 pounds when they are currently quoted in some other unit.

"The number of tons originated contains some duplications of tonnage due to the fact that the same traffic may be reported as being originated by more than one railway in cases where it is re-shipped on new bills of lading. The method used of dividing the aggregate revenue by the number of tons originated to obtain the revenue per ton gives no consideration to the length of haul of the individual commodities. Such information is not regularly compiled; however, special studies have developed this information for certain periods.

"Although care was used in assembling the price data in this statement and what were considered the best sources of information were drawn upon, in many instances the quotations were given for some other unit than weight and a standard equivalent for converting such unit prices was not always available. The prices represent those at one or in some cases more than one market, though it is recognized that the ideal price would be an average of the prices at all destinations, weighted by the tonnage terminated at these destinations. Thousands of commodities are grouped in the 157 classes and in the absence of knowledge as to the proportions of the components in each class, it is apparent that an accurate weighted average value for each class cannot be computed; however, weighted averages based on production were computed wherever possible."

Averages by Commodity Groups

The study's tables show averages for each of the commodity groups as follows:

	Freight Revenue		Value at Destination		Per cent freight revenue of value at destination
	Aggregate (thousands)	Per ton	Aggregate (thousands)	Per ton	
Products of Agriculture	\$471,600	\$5.44	\$4,925,609	\$56.85	9.57
Animals and Products	167,725	10.35	4,092,178	252.46	4.10
Products of Mines	1,020,851	1.89	3,353,152	6.19	30.44
Products of Forests	202,121	3.80	1,314,389	24.73	15.38
Manufactures and Miscellaneous	1,308,937	5.34	23,767,855	97.00	5.51
Grand total, car-load traffic	3,171,234	3.36	37,453,183	39.74	8.47
L.c.l. freight	256,352	15.73	3,029,205	185.93	8.46
Grand total, car-load and l.c.l. traffic	3,427,586	3.57	40,482,388	42.22	8.47

Within these groups there are, of course, various extremes. In the whole there is, for example, a range in the per cent freight revenue of value at destination from 60.24 per cent on watermelons to 1.21 per cent on tobacco, manufactured products. Among products of agriculture there is the range from the above-mentioned watermelon figure to the 1.93 per cent on tobacco leaf; animals and products from 18.34 per cent on live animals, n.o.s., to 1.28 per cent on leather; products of mines from 56.73 per cent on gravel and sand (other than glass or molding) to 4.45 per cent on lead ore and concentrates; products of forests from 58.58 per cent on posts, poles and piling to 2.18 per cent on crude rubber (not reclaimed); manufactures and miscellaneous from 34.72 per cent on furnace slag to the above-mentioned 1.21 per cent on tobacco, manufactured products.

"New Patterns in Industry"*

A plea for the "conference method" for the settlement of problems of labor relationship

By David B. Robertson

President, Brotherhood of Locomotive Firemen and Enginemen

THIS meeting seems to me symbolic of significant development. The fact that I have been selected by you as a representative of the vast army of men engaged in transportation to address you is an important omen of a new era in industrial relationships. The old idea that an unbridgeable gulf exists between the suppliers of capital, on the one hand, and the workers, on the other, who energize that capital to make it productive and that these two great factors in industry were bound to be mutually antagonistic, is now giving ground to a more enlightened concept—that these two great forces should be pulling together and should jointly explore the values that lie in the field of mutual cooperation, instead of pulling one against the other in a never-ending conflict, as though each were bent only upon gaining an advantage over the other.

The Railway Business Association represents a highly important factor, not only in the past growth of the railroads, but in their future development, for in a very special sense, you symbolize the technological progress of the railroad industry. You have created, through your respective companies, countless devices that have added to both efficiency and safety of rail transport. The reduction of risks and the fact that employment on railroads is today much safer, is due to the resourcefulness, initiative and research of the members of this great organization and the efforts of the brotherhoods.

Blazing New Trails

The great problem which lies ahead is not mechanical inventions; is not the chemical or physical discoveries; is not improved conditions for labor; is not the onward march of industry, vitally important as these are; but the great problem is the establishment of new patterns of human association in industry whereby opposing elements—often found far apart—are brought together through understanding.

Great research facilities—governmental, institutional and private—are applying intelligence to the physical sciences; but, unfortunately, less research is being devoted to improving human or social sciences. Often our economists are prone to segregate the social, when in fact the social must be the very heart of economics. The laboratory for developing this important human side of economics is by association across the conference table. The railroad industry in the past has demonstrated that this procedure is wise, practical and effective. Of course, such a laboratory of experimentation and demonstration is quite different from physical laboratories, since in it all elements of human nature are being tested and tried. Furthermore, infinite patience

is required to avoid counsels of despair, which in the last analysis are only counsels of impatience. As we proceed, we wonder how labor and the owner of capital have traditionally been apart. Surely, the locomotive with which I work—which is capital—must be a friend of mine in order for me to pursue my task. Surely, the stations I pass enroute to my destination, the tracks and ties and rights-of-way and structures, which the locomotive travels over, represent capital. These are not unfriendly to me. They are a part of my life without which I would have no employment.

Therefore, the trouble must not be with the functions of capital and labor, but the respective beliefs and attitudes of representatives of each. Both essentially must combine in making their product available to the consumer. The product is the objective for which each is employed, and it appears constructive that that product be of the highest quality. It thus seems necessary for us to inquire into how this quality can be improved, since, without distinction, we are all consumers of the product.

A New Pattern

Then, here is a new pattern of association through the conference method, where—by intelligent preparation and considerate recognition of differences of viewpoint—we can eliminate from controversy many questions upon which we oftentimes have been far apart. I am not a foolish optimist in this matter. Of course, there will always be conditions upon which management and worker cannot see eye to eye; but we cannot deny that if by mutual understanding through conference we can dispose of even 50 per cent of our contentions, we have narrowed the controversy and permitted concentration upon a solution of the remaining differences. However, this pattern would be impossible without an equality of power for bargaining purposes, together with equal prestige.

The collective power of capital resides in and is represented by management. The collective power of labor resides in organized representation of the employees' own choosing. The struggle of labor in the past has been to develop representative strength, so as to reach a basis equal with the economic power of the owner of capital. We are conscious of having achieved such strength, but we are also conscious of the responsibility which comes with such an achievement. The responsibility of both must primarily concern itself with delivering to the public a constantly improving quality and price of product. This ought to constitute our mutual objective!

New patterns of association demand revised conceptions on the part of labor and management. A greater degree of open-mindedness in the attitude of each is required in order to intelligently develop the confer-

* Abstract of an address presented before the twenty-ninth annual dinner of the Railway Business Association at the Hotel Stevens, Chicago, on Thursday evening, November 18.

ence method, which should result in a better co-ordination of the physical plant and the human plant.

Labor is conscious that management has the responsibility for delivering labor's product to the public. Its responsibility also is as trustee for the capital owner in the creation and operation of a profitable physical plant. Management must also direct the human plant. It is for us, who have the task of collectively representing this human plant, to assist in making the job of management more efficient and profitable. But it is also our task to protect and safeguard the rights and interests of the human plant.

At conferences with representatives of management, in most cases we have found a wise and tolerant point of view with a will to settle issues between us. It has been fortunate, too, that for the past 17 years, since the passage of the Transportation Act of 1920, we have mutually agreed on a number of legislative acts which have given us constantly improving facilities for a fair settlement of industrial disputes. These facilities are by no means perfect, but as experience with them proceeds, proper changes can take place by agreement that will make them more and more satisfactory.

Management Getting Closer to Labor

It is a happy circumstance that there are managements in our industry who are taking labor more and more into their confidence on plans and procedures in which labor may be involved—in other words, anticipating the possibility of disputes and thus avoiding them. I am convinced from the progress already made that management and labor, through the conference laboratory, can develop a practical technique for avoiding disputes before they reach a stage where interference with trade, commerce and the public interest, is threatened. For the problem of one is the problem of the other. Of course, this requires a statesmanlike attitude on the part of management and labor.

It seems to me that labor and the owner of capital can profit by following the principle laid down by Lincoln, when he said: "Labor is prior to and independent of capital. Capital is only the fruit of labor and never could have existed if labor had not first existed. Labor is the superior of capital and deserves the higher consideration."

I realize that all producers—whether they be workers, managers, or dollars,—are in the category of "labor" in the same sense that Lincoln used it. The earned capital, which is saved by labor out of its toil, and then put to work for it essentially is entitled to a fair return on its investment, thus contributing toward an improved standard of living. This principle of a fair return certainly should be safeguarded. But industry obviously must be prosperous in order to be attractive to capital savings. Prosperity makes it possible to obtain the plant and its equipment, which provides the employment of labor. But Lincoln apparently also had in mind what machines and labor produced was not consumed by the machine, but by those who labored and had the purchasing power to buy.

Workers' Right to Share in Increased Production

We have heard much in recent years of unemployment caused by technological progress. An equally important corollary of this question, which has not received the attention it deserves, is the workers' right to share in the increased productivity and profit created by technological development, quite as generally as such development tends to give price advantage to the user or consumer.

In other words, it is being generally recognized that higher wages constitute the most effective instrumentality through which consumer purchasing power is to be raised. The constantly expanding output of factories can be absorbed, not as in the past by growth in population, but by augmenting each family's ability to purchase more goods. Acceptance of this principle means that labor is entitled to be credited with a proportionately larger share of the divisible income arising from a growth in total production.

Is there any other method by which we can substantially increase consuming power? New devices—automobiles, radios, electric refrigerators and the like, with their great quantity production, have been produced generously in the last few years. Such products have been consumed by many millions of working men. It is true that capital has made these products available to us, but we would like to pay for them out of wages. In order to satisfy the economic and social wants stimulated by an amazing industrial salesmanship, with time payments, labor has developed a huge consumers' debt, which has to be met out of future wages. Is it not sound for us to strive to ascertain how to make current wages more adequately pay for current consumption? Surely industry and labor desire a complete answer to this question. Everyone wants a home into which he can fit higher standards of living—not extravagant but simple, wholesome and without debt. This is a very practical matter; but it represents what lies deep in the hearts of laboring men. Labor representatives, I am sure, would proffer their assistance to those of you who have the responsibility for management, to find the answer to this vital question.

What other recourse have we at present but to introduce our recurrent demands? The laboring man has to balance his budget and should have a little left over at the end of the year, just as industry should balance its budget and have a surplus remaining. I am sure we do not want an illusory answer to this question. If we are being fooled by attempting to satisfy our desires and aspirations, let us find it out co-operatively and get the answer before it is too late.

Greater production of things should not bring us greater insecurity. The distressing paradoxes of being poor because we are rich; cold because we have too much heat; hungry because we have too much food; ragged because we have too many clothes, are not creditable to our intelligence. Men will not stand idly by and allow such a fate to manifest itself; but may be expected to strike out blindly against whatever object their passion may fix its angry eye.

Attitude on Government Ownership

Those of us who have the responsibility for guiding our railroad labor organizations must be sensitive to the interests of our members; but no decision is made on any vital matter until it has had careful consideration by the various units of our democratic organizations—and the majority rules! It is our earnest wish to lead with policies that will soundly endure. That is why we most heartily welcome the conference method of dealing with our problems. The conference method seems to me to be the next logical step in the art of collective bargaining.

I have not found an increasing sentiment among railroad labor which would favor government ownership of railroads. Our attitude toward this subject has depended almost wholly upon the character of our relations with management. A constructive and sympathetic relationship, such as we feel we now have, certainly tends to build in our minds an earnest desire "to promote the

greatest success of private ownership." Furthermore, our contact with many individual managements, uninfluenced by politics, is infinitely more satisfactory than it would be if influenced by politics. Under government ownership and operation, we may be faced with, at least, the same uncertainties as to employment; the status of our organizations; and the equality of our bargaining power. The very suggestion of a single system of transportation would be disturbing. There would be difficulty of employment, since railroads do not enjoy a monopoly of transportation. If other forms of transportation were left completely free of government ownership and operation, I fear deeper inroads would be made into the railroad traffic structure.

It is true that labor gained and strengthened its status during the period of federal control, and this control placed us upon a very satisfactory basis of standardized wages and working conditions, for which we certainly are not unappreciative. But, since the period of federal control, much progress has been made, as I have stated before, in developing facilities for the settlement of industrial disputes and a recognition by management of representatives of their employees' own choosing.

We are jealous of the evolution of the methods which have been established between us under private ownership and control. Our greatest progress with legislation has been with legislative acts upon which management and labor have agreed. Hence, there seems every reason to believe that labor would favor a continuance of private ownership and operation, and would seek to co-operate with management in making it possible, since this is in line with the best interests of labor, industry and the public. I recognize, of course, that such a belief is futile unless we can constructively continue to settle disputes and differences, which otherwise we may reasonably expect will lead to some form of government ownership and operation.

Behind every proposed legislative bill, which has the support of railroad labor, there has been a definite dispute dealing chiefly with working conditions. Some of these disputes have been settled amicably and the need for the legislation dispelled. This has been accomplished by the conference method, and the settlements have been fair and equitable. I see no reason whatsoever why this conference method cannot continue to be used in an effort to compose any differences that may exist respecting all questions at issue, including those involving legislation.

In the last analysis, government must be the *servant* of the people! It is my feeling that government should retain its status as arbiter and regulator, so that we may at all times have a court of economic appeal; but there is no alternative other than more government intervention if the great economic and social problems are not settled between management and labor. That is why I am advocating tonight the establishment of new patterns of human association in industry, in which the railroads have already made singular progress.

Public Should Support the Railroads

Also, in the light of what I have said, I feel that it is only just that the public should support the railroads in their effort to increase their revenues to compensate them for increasing expenses, which have righteously improved the economic condition of the millions of workers employed by the railroads and the industries which supply the railroads with necessary operating materials. The shipping and traveling public has used in addition to railroads, other forms of transportation—unregulated and

enjoying alleged subsidies. This competition has resulted in a reduction of 23 per cent in railroad rates as a whole since 1923. However, some of these other forms of transportation are also in dire distress. Thus transportation rates for all forms of transport should be wisely advanced. Transportation service cannot be satisfactory to its users if it is being operated at a continuous loss. The resulting additional transportation costs can be properly included in commodity prices; and still keep such prices within range of what the public will pay.

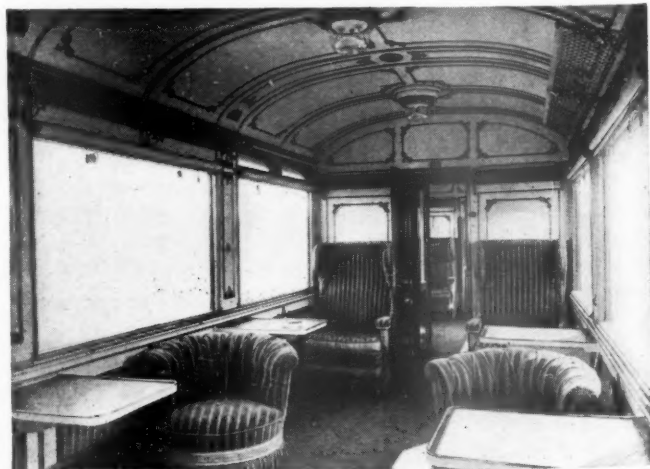
In the railroad industry we have blazed new trails in establishing for ourselves at least new patterns of human association, available to industry in general. I am convinced that this most difficult task of establishing a conference method will not only bear excellent fruit, but will be pointed to in the future as the way in which railroad management and labor met the swiftly changing conditions of our time. And I predict that this conference method, sincerely undertaken, will produce more enduring prosperity for the railroads through higher morale of their workers, and thus will demonstrate to the rest of industry a practical way out of many internal difficulties.

National Conference Should Be Organized

We are in a morass of uncertainty respecting the future of the railroads. We have been drifting like a ship without a rudder. We have no defined national policy for transportation. Many of our labor differences have arisen because the industry is without a rudder. The lack of such a policy, like a drifting ship, only means one thing—every man for himself! Since the Transportation Act of 1920, other forms of transportation than by rail have become not a threat but a serious government-subsidized, unequally-regulated force competitive to the railroads. Parts of that Act of 1920 have been thoroughly emasculated.

My suggestion is that a national conference be organized promptly, consisting of all interests furnishing and using the various kinds of American transportation and that this conference apply itself to the task of working out a national transportation policy to give us a rudder for our ship. The initiative for creating this conference can be in no other hands than those of railroad managements. It is plainly their primary responsibility. So I express the sincere hope that the proper railroad authorities will consider this suggestion, which obviously squares with the conference method that I am advocating.

* * *



Courtesy Austrian Publicity Bureau

Interior of Club Car on the 30-in. Gauge Mariazell Road, Austria

Engine Terminal at Flat Rock Built to High Standards

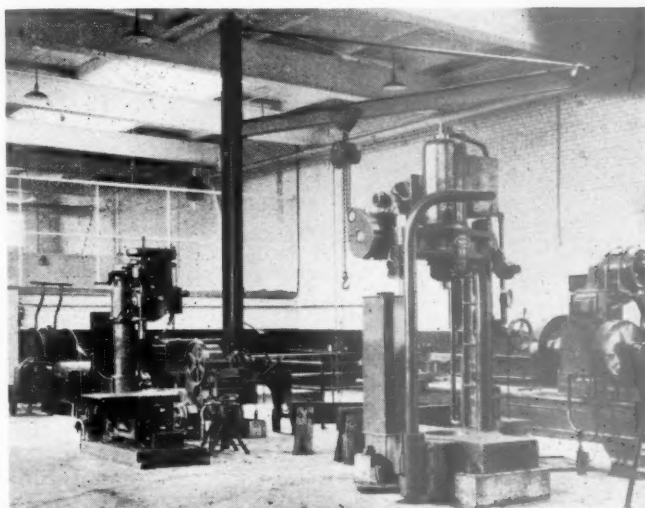
Facilities recently placed in service on the Detroit, Toledo & Ironton insure more economical servicing of locomotives

THE Detroit, Toledo & Ironton recently completed an engine terminal at Flat Rock, Mich., which is distinctive because of high standards of construction that insure efficient operation and low cost of maintenance. The plant is of moderate size, being designed to meet the requirements of a terminal that dispatches an average of 28 locomotives in 24 hours, with adequate allowance for any anticipated increase in the volume of traffic in the immediate future.

The building of this terminal comprises the latest step in a plan for the consolidation of locomotive facilities on this 472-mile railroad, which formerly embraced six terminals where maintenance work was done and which were subsequently reduced to two maintenance and two turnaround terminals. This new terminal replaces facilities formerly in service at Ecorse, Mich., a short distance south of the north end of the original line at West End avenue, Detroit. When the D. T. & I. completed its Dearborn branch from Flat Rock to Dearborn, it had two lines into the Detroit terminal area, each approximately 15 miles in length, but with a larger volume of traffic over the Dearborn branch which serves the larger industries in the Detroit area. Thus, Flat Rock became the logical place for the make-up and break-up of road trains, and following the construction of a classification yard at that point, movements over the two lines from Flat Rock into the Detroit terminal area have been handled by transfer crews. This arrangement, however, resulted in a large amount of dead mileage for road locomotives in running to and from the engine terminal at Ecorse, which the completion of the new locomotive terminal at Flat Rock has eliminated.

General Layout

In addition to an eight-stall enginehouse, which is served by a 102-ft. American Bridge Company continu-



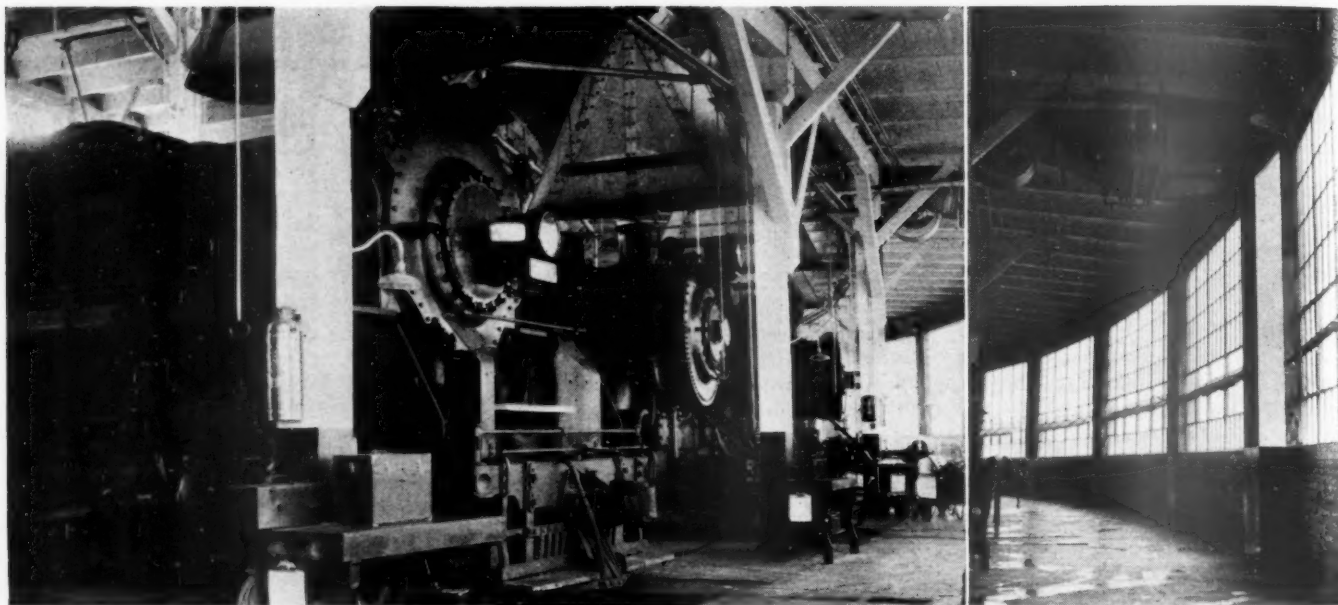
The Machine Shop

ous girder turntable, the new facilities include a machine shop, offices, storeroom, locker and toilet rooms, boiler plant, and a locomotive boiler blowdown, washout and refilling plant, all in one complete building. The enginehouse lead tracks are served by a coaling station, cinder plant, wash rack and water column, and there are eight outside radial tracks or open engine stalls, each of which is in alinement with one of the stall tracks in the house. Water is supplied from existing facilities that include a 150,000 gal. steel storage tank on a high tower.

The terminal building has concrete foundations and brick walls with concrete trim. The roof over the machine shop, storeroom and boiler room is supported on steel beams, but the entire frame and the monitor type roof of the enginehouse are of wood. The roof covering

General View of the Terminal Building—Engine Wash Rack in the Foreground





Interior of the Roundhouse—At the Right, a Portion of the Outer Wall, Showing the Defroster Unit

is Johns-Manville built-up roofing with a 15-year guarantee, and copper flashing is used throughout. The windows have steel sash, except in the transoms over the stall doors and in the monitor, where the sash are of wood. Walks were installed along both sides of the monitor for convenience in washing the windows and in opening and closing the hinged sash. The stall doors, of wood construction with steel bracing, were built by the Richards-Wilcox Company in accordance with a design, prepared by the railroad, that embodies top and bottom locking in the closed position and automatic latching of the doors to stop posts in the open position.

The Roundhouse

The roundhouse stalls have a length of 121 ft. 4 in. and are served by Johns-Manville transite smoke jacks. Each stall has a 100-ft. pit with exceptionally wide jacking planks (40 in.) outside each rail. The engine pits in the first two stalls adjacent to the machine shop are served by a wheel drop pit 9½ ft. wide equipped with a Whiting drop table, this drop pit extending under the partition wall to a roll-out track in the machine shop. The second of the two stall tracks served by the drop pit is extended through a door in the outer wall of the house far enough to permit a locomotive to advance to spot the rear tender trucks over the drop table.

Headers for blowdown, boiler washing and boiler filling and for cold water, steam and compressed air are supported overhead on the roof columns, with conven-

iently located drops at the columns. Boiler blowdown drops and steam drops are equipped with Barco ball joints. One stall is equipped for the use of a locomotive as an auxiliary steam plant, in the event that the boiler plant must be shut down. The steam line from the connection with the locomotive boiler to the steam header is provided with both a safety valve and a reducing valve to insure that the pressure in the heating system does not exceed 100 lb.

The terminal building is heated by means of 23 unit heaters supplied by the Ilg Electric Ventilating Company, Chicago. There are 11 of them in the roundhouse, each of which delivers 2,560 cu. ft. of air per min. at 115 deg. F. Of particular interest is a special heating unit which functions as a defroster of locomotive running gears. It consists of an Ilg centrifugal fan that delivers 7,700 cu. ft. of air through steam coils that heat the air to 214 deg. F. This equipment is mounted overhead at the outer end of one of the stalls, whence the air is carried through a duct to the outer ends of each of two pits and thus produces a blast of hot air lengthwise of the pits. Deflectors may be inserted at any point in the pits for the purpose of directing the air against the frames or machinery.

Well Appointed Boiler Plant

The boiler plant houses a 200-hp. water-tube boiler, hand fired with coal received in a track hopper under an adjacent outside track. In addition to a locomotive-type



Looking Out Over the Engine-house Lead—Wash Rack on the Left, Cinder Plant and Water Column in the Center, and the Cooling Station in the Background

boiler feed pump, and a Worthington air compressor, rated at 350 cu. ft. of free air per min. and equipped with a pump for the circulating of cooling water, the boiler room houses the tanks, pumps and regulating equipment of the boiler blowdown, washing and filling system.

In addition to special pains taken in the insulation of the tanks, piping, steam separator and condenser, to obtain a maximum conservation of the available heat in the water and steam released in the blowing down of locomotives, the boiler blowdown-washing-filling system also embodies a distinctive feature, in that a blowdown station has been provided at the cinder pit. As a consequence, the discharge from the partial blowing off of the boilers of locomotives entering the terminal is received into the system instead of being wasted.

All functions of the plant are under automatic or push-button remote control. The delivery of cold water to the condenser is controlled by a thermostat installed in the latter and by a float in the filling water tank so that the filling water is maintained at a temperature of 205 deg. F. A drop in the temperature below this level results in the recirculation of the filling water through the condenser, rather than the admission of cold water. Recirculation is effected by a centrifugal pump with a capacity of 300 gal. per min. against a head of 45 ft. operated by a 5-hp. motor.

The filling water and the washing water are delivered to the locomotives by duplicate centrifugal pumps hav-

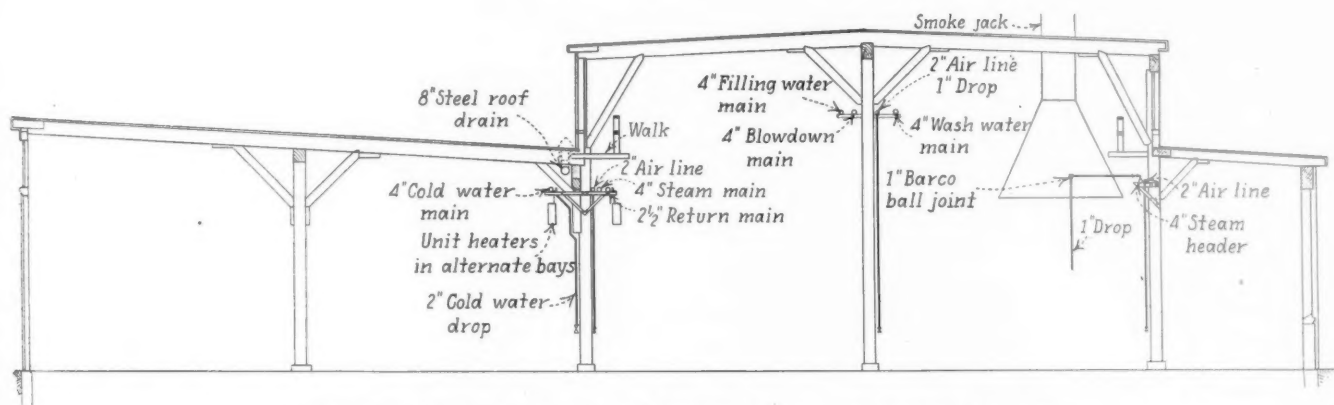
materials to any part of the shop or roundhouse, doors being of sufficient dimensions to allow the movement of a portable crane through them.

The terminal building also houses a shop office, offices for the yardmaster, the road foreman of engines, and the trainmaster, and locker rooms and toilet rooms for both shop forces and transportation employees. Each toilet room is equipped with three toilets, two urinals, two shower baths and a Bradley wash fountain, the water supply for the latter being thermostatically controlled to preclude scalding temperatures. The floors are of terrazzo in the toilet rooms, are of wood covered with linoleum in the offices, and are of concrete in the remainder of the building.

Outside Facilities

The engine terminal lead embraces two outbound and two inbound tracks, except that one of the inbound tracks has been connected into the other between the coaling station and the turntable, so that there is only one inbound track across the cinder pit and the wash rack. However, adequate space has been left for the extension of the second inbound track directly to the turntable whenever there is a need for greater cinder-pit and wash-rack capacity.

The coaling station, designed and constructed by the Ogle Construction Company, Chicago, is a steel structure providing separate overhead storage for stoker and



Longitudinal Section of a Typical Stall, Showing the Layout of the Service Piping

ing a capacity of 150 gal. per min. each, against a head of 290 ft. These pumps, which are operated by 25-hp. motors, are stopped and started from push-button controls at the washout and filling stations in the roundhouse.

Machine Tool Equipment

The machine shop is a room 71 ft. 10 in. by 41 ft. in plan, with two doors leading into the enginehouse. It is equipped with a blacksmith shop forge, babbitting furnace and fixtures for crosshead work, and a bending slab, all served by a jib crane. There are included also a 32-in. shaper; 36-in., 18-in. and 14-in. lathes; an emery wheel; a sensitive drill press; a radial drill press; a bolt threader and a 42-in. boring mill; and space has been provided adjacent to the drop pit for a wheel lathe. The machine tool area of the shop is served by a 3000-lb. jib crane with a working radius of 15 ft.

Immediately to the south of the shop is a store room served by a loading platform adjacent to a depressed track, and supplemented by an outside storage platform. The entire layout is arranged for convenient delivery of

hand-fired coal to a total capacity of 250 tons. One chute delivers stoker coal to locomotives on one track and another delivers the hand-fired coal to locomotives on the other track. Coal is received in a 12-ft. track hopper and is hoisted to the overhead storage by an automatically operated electric hoist with a capacity of 40 tons per hour. The sand drying plant, immediately adjacent, has an open-top wet sand storage of 300 tons capacity and a Pyropad sand dryer. Dry sand is moved by compressed air to an elevated storage tank of 10 tons capacity. The position of the sand delivery spouts relative to the coaling aprons is such that most locomotives can take coal and sand at one spotting.

The cinder handling plant, also supplied by the Ogle company, is of the semi-automatic hoist bucket type, involving the use of a bucket that moves through a tunnel from beneath cast iron track hoppers to a tower for disposal into cars on an adjacent track. The bucket has a capacity of 50 cu. ft. and the hoppers 80 cu. ft. While the cinder plant serves but the one inbound track, the tunnel has been completed under the location of the future second inbound track.

The wash rack, of concrete and wood construction,

has a length of 110 ft. and is equipped on each side with three flood lights and a hydrant for cleaning-solution hose lines. The cleaning solution is delivered at 150 lb. pressure from the boiler house by a two-stage centrifugal pump, that is under remote push-button control, while a chemical pump introduces the cleaning fluid into the hot water in the proportions desired.

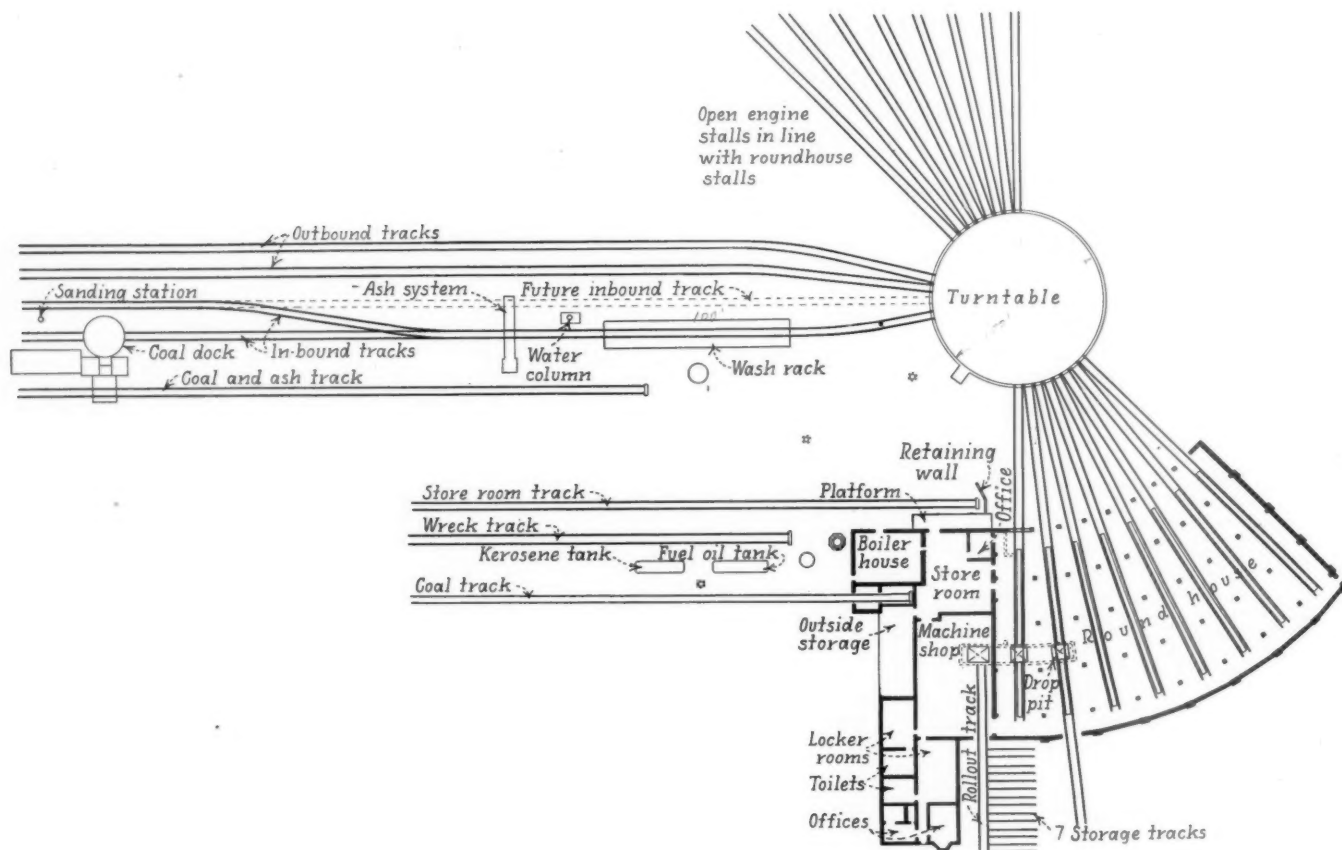
Power and Lighting

Electric power is obtained from the Detroit Edison Company at 4,800 volts, 3-phase, 60-cycle, being transformed by three single phase 100 Kv.a. General Electric oil-insulated, self-cooled, outdoor type transformers, located on the roof of the power house, to 220-volt, 3-phase, 60-cycle for power distribution and, by use of a half-tap, to 110-volts for lighting and 100-volts for power circuits.

The type and arrangement of lighting fixtures were varied to meet the requirements of the various sections

special feature of the storehouse lighting is the use of Appleton No. 1527 Reelites provided to give light as needed for the bins, etc. The washrooms and locker rooms are equipped with 100-watt, 12-in. R.L.M. reflectors, while the yardmaster's office, trainmaster's office and conference room have bowl-type fixtures on drop chains with 200-watt lamps. Yard floodlighting includes two 750-watt flood lamps on the coaling station tower, 85 ft. above the ground, and three 1,000-watt lamps on the water tank, 137 ft. above the ground.

Shreve, Anderson and Walker, Inc., engineers and architects of Detroit, Mich., designed and detailed the plans for the terminal under the direction of F. W. Kasten, chief engineer, and R. W. Wilber, superintendent of motive power, of the Detroit, Toledo & Iron-
ton. The plant was constructed under a general contract by W. H. Mueller, Detroit, Mich., and all pipe work, including sewers and drains, was installed by the Gale Service and Construction Company, Chicago, which company also designed and constructed the blowdown,



Plan of the New Engine Terminal, Together with a Portion of the Lead Tracks

equipped. Three 300-watt Goodrich angle-type reflectors were placed on each side of each roundhouse pit, with one 300-watt reflector of the same type at the outer end of each pit, and one 200-watt lamp with a 14-in. R.L.M. reflector at the back of each pit. The circuits and toggle-type switches are arranged so that light may be selected from the proper direction only, thus cutting to a minimum the unnecessary burning of lamps. Vapor-proof 100-watt lamps are used in the drop pit, and receptacles are provided for the use of portable extension cord lamps.

In the storehouse, machine shop, power house, and over outside doors, material platforms, etc., 200-watt clear lamps with 14-in. R.L.M. reflectors are used. A

washout and filling equipment. The electrical work was done by the Brooker Engineering Company of Detroit. Work on the terminal was started in October, 1936, and the plant was placed in service on May 10, 1937.

TO FURTHER THE INFLUENCE of its school students' railway club, the Victorian Railways now issues to over 3,600 young members of the organization a four-page "bulletin" containing news and notes calculated to satisfy the curiosity of youthful railway fans. Eligibility for membership in the so-called "Scholars' Club" is granted automatically to all students participating in the educational tours of railway facilities in the vicinity of Melbourne which are operated periodically by the system.

"Cost" — But Is It "Accounting"?

Value of service is an economic consideration which costing theorists overlook in their zeal to impose their expensive hobby on the railroads

By John Q. Citizen*

NO doubt there are living many who still cherish the delusion that perpetual motion may be accomplished. The world whirls around its axis, gravitation still works, waters are still buoyant, magnets still attract, so why cannot a machine be made to combine these forces and do our work without further effort?

The will-o'-the-wisp of cost accounting for railroads is again receiving wishful attention. The Interstate Commerce Commission at various times has engaged pseudo-experts to report on this possibility and an order is out directing an investigation looking to the adoption of a plan.

Arbitrary Assignment

Conceivably, a pharmaceutical laboratory might institute a cost system which would be helpful in a small way but even there, if the facts are examined, there are many variables that must be assigned arbitrary values.

It might be found, for example, that essential oils, which cost 27½ cents, could be combined with alcohol costing 48½ cents, by labor costing 9¾ cents, and put in bottles costing 2 cents each with fancy wrappers and labels, cost 2½ cents more, and then by *guessing* at the state of the market it might be *estimated* that through the expenditure of \$5 a dozen for advertising, sales could be effected at a profit of 100 per cent.

To arrive at a fair price, of course, it would then be necessary to include not only the advertising but the direct overhead, which might amount to \$2 a case, and somebody certainly would have to exercise judgment as to what part of the general overhead would have to be assigned to this particular compound as against many others from the same factory.

In such a case, evidently, there is more of judgment than cost accounting used in the price fixing. Cost accounting seems (but isn't) practical when a given number of objects flow into the making of one tangible object as, for example, in making automobiles or locomotives. We cannot depend upon it for price-making. The scheme is utterly chimerical

when one object is broken down into many, and still more so when we attempt to measure the costs of a given service, consisting largely of human labor and including much standing-by or readiness-to-serve expense in the totals.

Past Performance an Unsafe Guide

A small farmer lad sent out to count the new pigs reported that he was sure of four but the others ran around so fast that he couldn't count them. That boy's dilemma was as nothing compared with that of the railroad's cost accountant. One or two elements may have fixed values but a thousand variables enter the equation and can be used, if at all, only as "statistical aids to an informed judgment." And when new factors enter, such as the comparatively new and rapidly developing competition from non-rail carriers, we are lost when we attempt to build upon statistics relating to a past period.

A packing plant may know what hogs cost, on the average and, by experience, know fairly well how many pounds of ham, shoulders, bacon of several varieties, ribs, plates, lard, hog's-head cheese, fertilizer, and dozens of other products will be turned out from a given number of hogs.

Having reduced the pig to its marketable products, it would be possible, under conditions existing at the moment, to work out the variables for the whole lot; the

overhead, taxes, the cost of advertising, insurance and elements which the farmer always is told amount to more than he is able to get for the pig could be assigned. But that is only a small part of the problem. If business is slack, obviously the overhead spreads over a few hogs; if brisk, over many. So the *costing puts prices up when demand fails and down when people are willing to pay for meat.*

But, how much is a ham worth? What will the Atlanta market pay for chit'lins? And what did lard cost when it comes up against cotton seed oil shortening? No cost system, however refined, will determine such questions, but that is a problem which confronts the packer.

Consider oil. More than two hundred distinct prod-

Valuation Fiasco a Warning to Costing Zealots

Rate-making or any kind of pricing which relies solely on "costs," ignoring the value placed on a product or service by the demand for it, is violative of economic fundamentals. Any elementary student of economics recognizes this, but "cost" accounting zealots do not. Where "costs" cannot be accurately determined, but have to be arbitrarily assigned, their significance for rate making is even more questionable. Such, at any rate, is the belief of opponents of railway rates based on "costs."

The writer of this article compares the current drive for cost accounting for rate-making purposes with the enthusiasm for valuation a generation ago. The nation, and the railroads, followed their preaching at tremendous expense; and nothing but confusion came of it. This writer predicts the same outcome for "cost" accounting, if and when it is forced upon the railroads.

* We preserve our contributor's real identity under this pseudonym — but we'll go so far as to say that he is a railroader, and not without some experience in accounting.

ucts come from the same still. Oldsters remember when gasoline, now the main product, was stuffed into the kerosene or poured in the creeks to get rid of it. What does it cost and how much for vaseline or aspirin? An accountant would need a lot of the latter if he attempted to ascertain costs closely enough to do any practical good.

That example is simplicity itself compared with the railroads' plight. They not only carry widely divergent burdens, such as passengers, mail, express, but thousands of kinds of freight which are classed according to past practices, economic pressure, ability to pay. The oil companies pull few blanks, and packers are said to lose only the squeal, but a railroad handles millions of empty seat-miles, empty berth-miles, empty freight car-miles, all of which are expensive, non-productive, variable from day to day and season to season, but a necessary part of the scheme of things. Who will cost the blanks?

A Plan for Railroad Cost Finding

In the case of the railroad, if we are to have a cost system let us begin at the bottom. The car is a unit of transportation. Let us assume, first, that we have a well developed, efficiently managed plant with all the necessary power and labor and that we desire cost accounting so as to make reasonable rates.

Then let us proceed by ascertaining, first, the out-of-pocket cost of moving an empty car, say 100 miles. This item, of course, will vary with the number of cars in the train and the speed with which they are moved; also the terrain over which moved, but we may strike an average which will recognize no existing conditions anywhere but it will be the average.

Now let us introduce a ton of freight into one of the cars. How much does the out-of-pocket cost change? Nobody knows. Then load the car to capacity. How much does the out-of-pocket cost change? Nobody knows. Fill a train up with such cars and in particular instances we can determine the out-of-pocket cost of moving the particular train under given conditions. But next day comes a snowstorm and the out-of-pocket cost changes.

Now complicate the problem by introducing other variables such as the amount of loss and damage the carrier ordinarily sustains for a given traffic, the special conditions of loading or unloading, the ease with which the loading may be assembled and discharged; and then, above all that, we have terminal expenses alike in no two places, the general expenses, and the fixed charges which care little for volume or kind of traffic, competitive expenses such as traffic, and we have the accounting costs with many other expenses which vary more or less but not directly with the volume of traffic and the particular conditions governing the movement.

A Rhymed Formula for Rate Making

Is not the whole idea based upon what the psychiatrist calls a "fugit from reality?" Charged with great responsibility the Commission finds it necessary to exercise a reasoned judgment. Pressure from all sides is so great that in its bewilderment advocates of cost accounting seek a slide rule method by which rates can be made without discrimination or offense to any important interest or organized group. One is reminded of the old nursery rhyme:

Eeny, meeny, miney, mo
Catch a shipper by the toe,
If he hollers, let him go,
Eeny, meeny, miney, mo.

The rhyme does not say what to do if he does not holler. But the slide rule method of rate making will never tell. Either the law of supply and demand must be left to work its course, or the Commission must accept its responsibilities and fix rates that will keep the carriers alive and healthy and at same time permit the traffic to move freely, which is the old rule, adopted before the Commission was in existence, of "charging what (not all) the traffic will bear."

Did Valuation Experience Teach Us Nothing?

Thirty years ago valuation was the panacea for all rate controversies. If we could but know the real value of these railroads then we could limit their earnings to a fair return. The job could be done in two years, it was argued. Hundreds of millions have gone into this rat hole and no main question has been settled. In fact valuation and return no longer cut any great figure in our affairs. Now the talk is, if we could know what it actually costs to move a ton of freight one mile, we would have an infallible yardstick to which need only be applied the multiplication table and the rates would roll out self made, thus relieving our consciences of the burden of seeing any road really prosperous.

Deliver us from this new dream!

At best, any plan so far made public will be an expensive and misleading assembly of averages based upon past performance and as useless for practical purposes as statistics relating to the average income of the average family under average conditions. Such a family is not found when we come to deal out relief.

Cost Accounting Probe Launched by I.C.C.

WASHINGTON, D. C.

RESPONDING to a request of the National Industrial Traffic League, the Interstate Commerce Commission has instituted upon its own motion an investigation—Ex Parte No. 122—to determine whether common and contract carriers subject to the Interstate Commerce Act shall be required to file special or annual reports for cost-finding purposes in accordance with the plan recommended by the former Federal Co-Ordinator of Transportation in his June, 1936, report entitled "Cost Finding in Railway Freight Service for Regulatory Purposes," or "some other plan."

The report referred to was outlined in the *Railway Age* of June 13, 1936, page 947. Made by John H. Williams, to Commissioner Joseph B. Eastman, then co-ordinator, it comprised a proposed plan of standard procedure for determining average over-all costs of railroad freight service in units corresponding to the rates charged for such services, for use in connection with rate-making and rate regulation, based on data to be furnished by the railroads in supplements to their annual reports and to be determined periodically by continuous routine. At the time of the report's publication Mr. Eastman said that "in my judgment it points the way to the introduction of a practical system of standard and routine cost-finding for use in connection with rate-making," adding that, while he did not undertake to vouch finally and irrevocably for all the details of the plan, he was fully persuaded that it proceeded in general along sound lines and warranted without question the practical test which its authors proposed as a first step towards the introduction of the new system.

It was recommended that the plan first be made effective and perfected on a limited number of railroads selected as representative and that the commission create a small organization unit to supervise and direct the working of the proposed plan. In the latter connection the commission has recently created a new Division 6 to deal with accounting matters; Commissioners Eastman, Mahaffie and Splawn comprise this division.

In his comment on the Williams report at the time Mr. Eastman went on to say that "there is every reason, apparently, to believe that the railroads will object, but that is because they do not recognize, as they soon will, the great need for information of this character in connection with present-day competitive conditions in transportation, or the demands for it which will be voiced by those who use the railroads and other transportation agencies."

Highway Carriers and Pipe Lines Included

The commission's order of investigation brings within the scope of the inquiry all common and contract carriers subject to Part I and Part II of the Interstate Commerce Act, which includes motor carriers and pipe lines. The order, after its opening reference to the N.I.T. League request, refers to proceedings before the commission "in which the parties are endeavoring to determine the costs of railway, highway and waterway transportation"; to a request of the Railroad Commission for "the co-operation of this commission in the development

of cost finding methods for transportation by pipe line"; and to cases before the commission wherein "parties are presenting evidence as to transportation costs within state boundaries, obtained by apportioning transportation system expenses to the various states served without uniformity in the methods used for such apportionments." The schedule of hearings will be announced later.

The N.I.T. League request was embodied in a letter recently sent to I.C.C. Secretary Bartel by a special committee of the League, composed of R. C. Fulbright, W. H. Day and C. T. Vandover. The letter calls attention to N.I.T.L.'s continuing interest in the subject since active consideration of it by the commission was discontinued in 1931 "because of the then financial distress of the railroads." At its November, 1936, annual meeting the letter continued, the League took action favoring the adoption of the Williams plan "or some system of cost accounting by which shippers may be able to better determine the cost of railway service"; and appointed the above-mentioned special committee to act for N.I.T.L. on the subject. The letter also suggested that the commission "may desire to extend such studies so as to embrace some ascertainment of cost of performance to other forms of transportation."

The League did not make a formal request for a reconsideration of the commission's action in dismissing Ex Parte 91, Accounting Rules for Steam Railroads—it thought that the commission "can best determine what procedure it shall institute in arranging for an investigation of this subject."

Car Design and Construction*

A discussion of the developments in designing for light weight and the use of weight-saving and corrosion-resisting materials

By W. H. Mussey

Engineer of Research, Pullman-Standard Car Manufacturing Company

THE whole country is becoming weight conscious and the railroads and allied industries are alive to the irresistible urge. The more dead weight you save the less the demand on the power plant that hauls the train. Take a glance at the results to be obtained from the saving of deadweight in two types of service—passenger and freight.

Passenger Service

The public demand and the railroads are speeding up train schedules. In all cases the schedule is dependent upon the ability of the power plant to do the job and that means get into the terminal on time, taking into account not only the tightness of the schedule but delays, usual and unusual, that are bound to occur.

Railroads will not reduce the number of cars hauled below passenger-space requirements and the operation of two sections where one should answer is not worthy of consideration.

There are two vital factors which combine to make

up train resistance and determine the amount of work the power plant must do—wind pressure and weight.

Streamlining is a very important item at extremely high speeds and on short trains, but as the length of train increases the advantage gained by streamlining decreases due to increase in skin friction. Streamlining contributes to reduction of train resistance, has eye appeal, and the public likes it. They sense that they are on a modern high-speed train.

When it comes to starting, accelerations after slow-downs and mounting grades, it is reduction in weight, not streamlining, that counts. From our own knowledge most high-speed passenger-train schedules stand or fall due to the ability of the power plant properly to handle starting, acceleration and grades and their importance seems to progress in the order named. Saving of dead weight permits train speeds of more miles per hour.

One might ask why not increase the size and capacity of the power plant. If it were practical by so doing to meet the power requirements imposed in making high schedules with heavy trains, it would be undesirable, from an economic standpoint, for reasons that must be obvious to all. As a proof of this, the manufacturer

* A paper presented at a meeting of the New York Railroad Club, November 12, 1937.

of the power plant, whether it be a steam locomotive or an internal-combustion engine, is the staunchest advocate, of the lightweight train for high-speed service.

Freight Service

The freight car offers a field only casually explored as to the savings that will result from the reduction in dead-weight tonnage.

A saving of five tons in dead weight of a box car means approximately 54,000 ton-miles per year. If all of the 730,000 box cars in service each represented a like reduction, the saving would be 39,420,000,000 ton-miles per year. You can't laugh that off!

New Materials and Tools

New materials and new tools have been introduced which present the key to the attainment of the goal—the reduction in dead weight of railroad equipment.

Let us first consider the materials which are now available and their possible, or practical, application to the problem.

The materials are low-chrome high-tensile steel, stainless steel (18-8) in the cold rolled state and high-tensile aluminum alloy (17 ST) heat treated.

We give their physical characteristics in the order named and, as a comparative yardstick, I quote, first, normal low-carbon open hearth as per A.A.R. Specification (M-116-34).

LOW-CARBON OPEN-HEARTH STEEL

Plates for cold pressing	
Modulus of elasticity	28 to 30 million; average material 29 million
Yield point	24,000 to 29,000 lb. per sq. in.; actual minimum about 30,000 lb. per sq. in.
Tensile strength	48,000 to 58,000 lb. per sq. in.; actual minimum about 60,000 lb. per sq. in.
Elongation in 2 in.	Not covered by specification—minimum about 30 per cent

LOW-CHROME HIGH-TENSILE STEEL

U. S. Steel Specification for Cor-Ten	
Modulus of elasticity	28 to 30 million; average material 29 million
Yield point, minimum	50,000 lb. per sq. in.—average material 55,000 lb. per sq. in.
Tensile strength	60,000 to 75,000 lb. per sq. in.—average material 75,000 lb. per sq. in.
Elongation in 2 in.	23 to 28 per cent—average material indicates 28 per cent

STAINLESS STEEL (18 PER CENT CHROMIUM, 8 PER CENT NICKEL)

U. S. Steel Specification	
Modulus of elasticity	Quoted as 28 million
The above figure applies only to the material in the annealed state. When cold rolled for essential parts of car structures actual tests indicate 21 to 23 million.	
Yield point	60,000 to 125,000 lb. per sq. in.
Cold rolled specimens indicate a yield point considerably above 125,000 lb. per sq. in.	
Tensile strength	110,000 to 175,000 lb. per sq. in.
Elongation in 2 in.	10-45 per cent
The percentage of elongation decreases in proportion to the extent of the cold rolling. Tests made of material used in car structures indicate less than 20 per cent.	

HIGH-TENSILE HEAT-TREATED ALUMINUM (17 ST)

Specification of The Aluminum Company of America	
Modulus of elasticity	10,300,000
Yield point (typical)	35,000 lb. per sq. in.
Tensile strength (typical)	58,000 lb. per sq. in.
Elongation in 2 in.	20 per cent
Tests of average samples indicate..	26 per cent

We put the modulus of elasticity as the first item in each case as it is the dominating factor in the deflection formula. It has been the policy of the Pullman-Standard Car Manufacturing Company in designing all of its railway passenger equipment to keep within the requirements of the Railway Mail Service Specifications which in the past have always been the basis also of passenger-carrying cars purchased by the railways. We do not say that the new cars are stronger than the more con-

ventional type of passenger-train equipment which has been operating on the rails during the past quarter century. We do, however, claim that the new cars built by this company are of equal strength to withstand buffing shocks with the older equipment and that they comply fully with the Railway Mail Service Specifications. If it were not for certain physical characteristics peculiar to aluminum and stainless steel of high-tensile grade, cars which are designed of these two materials could be somewhat lighter than it is possible to make them and still comply with the Railway Mail Service Specifications and the requirements of good car design.

The engineer has been accustomed to designing cars based on the stress calculations when using ordinary open-hearth steel. If this method is followed in the design of aluminum and high-tensile stainless-steel structures subject to buffing and other live loads resulting from operation in service, the car will present too much flexibility, due to the resiliency of these two materials which exhibit greater deflections in the high-tensile state than the low-chrome alloys for the same cross-sections when subjected to identical loads. For this reason it is necessary, in order to provide for the proper strength and rigidity of car structures to increase the cross-section of the load-carrying members made of aluminum or high-tensile stainless steel, subjected to compression stresses, sufficiently to keep the amount of deflection within satisfactory limits. In aluminum the cross-section can be satisfactorily increased and still have a resulting weight considerably under the weight of corresponding members built of any of the alloy steels, but the amount that must be added to the stainless-steel member increases the weight because a cubic foot of steel weighs the same whether it is of high-tensile stainless steel, or Cor-Ten.

The above outline briefly states the reason that the Pullman-Standard Car Manufacturing Company has confined its efforts to aluminum and low-chrome high-tensile alloy steel in the design and construction of its lightweight cars. As stated before, it is a question of economics. For this reason it is our belief that in the long run the majority of steel passenger cars will be built of moderately priced low-chrome alloys and that, when extremely light weight is desired, aluminum will be used.

It is a very interesting thing in considering some of the exaggerated claims of extreme weight savings over present lightweight equipment to realize that, for a Pullman sleeper car-body-framing members only, the weight has been decreased from 58,330 lb. for a conventional riveted car of low-carbon normal steel to 26,000 lb., and, for a coach, to 23,000 lb., both fully welded, and it must be evident to all that any considerable further saving cannot be obtained by reducing the car framing with the use of any type of steel of which we have commercial knowledge. The additional saving must come by taking into account everything that goes inside or outside this car shell, as well as the trucks.

In the construction of freight cars the total cost of the car is relatively low as compared with passenger cars, and railroads, as a whole, have felt, whether they are right or wrong, that lightweight freight cars of ample strength to replace the present freight car must represent no material increase in cost. This naturally limits us, as we see it now, to low-carbon steel, with and without copper content and Cor-Ten steel, or equivalent, with its increased corrosion resistance. Two other materials—aluminum and high-tensile stainless steel—represent a cost per pound which, naturally, would add considerably to the cost of a freight car and, as we see it, would not be justified, except in special cases.

The spread in cost between normal low-carbon steel and low-chrome high-tensile steel amounts to something, of course, but, as we have clearly demonstrated, we can, commercially, in design and construction, utilize the higher yield point of this material to its fullest extent and make a larger reduction in weight. We are convinced that further considerable increase in yield point would be of small additional value and, of course, would entail an added cost considering any material commercially produced at present.

Corrosion Resistance

The cars we have designed and built have been constructed of Cor-Ten steel, or equivalent, and the results obtained have justified its use. Recent tests of the box car built by the Pullman-Standard Car Manufacturing Company which was on exhibit at Atlantic City in June have been viewed by officers of the A.A.R. and a good many railroad men covering a wide cross-section of the railroads of the country. They have demonstrated that the car is capable of standing at least as great and probably greater impact blows, both longitudinal (buffing) and vertical (live load), than the standard A.A.R. car. It must be said for the A.A.R. car, however, that it has fully met all operating requirements; the tests to which we subjected these cars are excessive and of a destructive nature.

There has been much discussion as to the corrosion resistance of various materials entering into car construction. This general term needs some explanation, or rather a statement of what corrosion really means.

There are, as we see it, two types of corrosion—one is straight atmospheric corrosion, which proper maintenance will fully take care of; the other type, which is more serious, is corrosion due to working of the sheets, localization of stresses, etc., which might be called accelerated corrosion. This is the problem. Undoubtedly, any material which has increased corrosion resistance, such as the low-chrome high-tensile steel, aluminum, except in the presence of alkalies, and stainless steel, with its high corrosion resistance properties, is a desirable thing, but to pay any considerable premium for this quality does not seem to be justified by the facts.

The Pullman Company has made various examinations of car structures built more than 25 years ago and others of less age and corrosion present as disclosed by the removal of inside finish sheets has been of a negligible character; in other words, we might say it is practically nil. That, of course, applies to passenger cars and is the result of proper design and maintenance.

Examination of many freight cars shows that what has been said of passenger cars also applies to freight cars. One very marked example of this is the five welded hopper cars which we built in 1931 for the Chicago Great Western with which you are all probably familiar. The coal that is hauled in these cars is of relatively high sulphur content and considerably more corrosive than the average coal, yet, from frequent examinations of these welded structures, which are of plain open hearth steel, we have found only a small low rate corrosion. There seems to be no doubt that the life of these cars will not be dependent upon corrosion of the essential parts of the structure. The same cannot, however, be said of riveted cars built at the same time, of the same material, and operating under the same conditions.

It is self-evident to all that have made even the most casual study of car design and car structures that the only possible way that we may reduce weight in car

framing structures is to reduce the cross-sectional area or thickness of the sections, plate, bars and sheets that go to make up this structure and thereby take full advantage of the physical characteristics of the steels.

Of course, the customary riveting of car structures has proved very satisfactory in conventional car design because the heavier sections provide sufficient bearing area for the rivets. The net section left in the sheet, plates, etc., after the holes are punched in them is sufficient to develop proper strength in the car framing and it isn't necessary that the car represent, in effect, a one-piece structure, because the members are of sufficient size to stand various concentrations of stress and deflection. However, when we come to the thinner members it is necessary to obtain proper strength and weather tightness, and that means rivets, if used, which are placed very close together in the case of both superstructure and underframe. Then the net sections of a plate or sheet available to withstand severe service has been very markedly decreased. Furthermore, naturally the rivets would be of such size that they couldn't withstand the extreme concentrations produced by impact stresses.

Welded Construction

A study of welded construction convinced us that a welded structure properly designed and built would produce the strongest and lightest car.

It was further decided that the light sheets and, in fact, practically all of the superstructure would have to be spot-welded, both from a design and commercial standpoint. Arc or gas welding has the greater value in fabricating the underframe members and should be used, therefore, for the best results.

In 1935 we built a lightweight box car of Cor-Ten steel in which the underframe was partly arc welded and partly riveted. The superstructure was spot-welded. This car was built as an experimental lightweight car for the purpose of determining suitability of low-chrome high-tensile steel, or the soundness of the principles of design, the practicability of the type of welding equipment and the possibility of building such a car weighing $4\frac{1}{2}$ tons less than, but at the same cost as, the A.A.R. standard car.

The box car was tested by the A.A.R. for static and live-load vertical loadings and under impact tests. After that it was put in service and has made in excess of 26,000 miles with no repairs.

Shortly after this we built an alloy-steel welded refrigerator car with outside welded-steel sheathing. The underframe was fully arc welded and the superstructure spot welded, using the same equipment for spot welding as had been used in connection with the box car.

The refrigerator car represents a saving of 10,000 to 13,000 lb. in weight over other cars of similar size and that car has made approximately 40,000 miles, with no repairs other than the usual run of maintenance items such as brake shoes, bearings, etc.

This demonstrated to us that a welded car could be built for severe service and it would give good results and be perfectly satisfactory.

Under the impact test of the lightweight box car (PLM No. 500) we had a chance to study a combination of riveting and welding on the underframe, the practicability of the spot-welding equipment available at the time this car was built and to study methods for reducing costs.

After a very careful analysis of the results obtained from impact testing and of the car in service, we thoroughly explored the field of spot-welding technique and

equipment. In the first part of this year we convinced ourselves that steel freight cars could be produced at a low cost with absolutely reliable welds. The previous designs needed some modification to use the best that there was in spot welding. The same general fundamentals could be followed as practiced on the first car. The combination of riveting and arc welding on the underframe was not the equivalent of a fully welded construction. The center filler, back stop and the striking members were built up of rolled plates welded into the center sill conforming to the construction we have applied to many cars with most satisfactory results.

In April of this year we were authorized to build another welded box car of the new A.A.R. dimensions which are larger than the previous standard. The car was completed in May and was on exhibition at the A.A.R. convention in Atlantic City in June. It represented a saving of approximately five tons in deadweight over the A.A.R. box car of similar large dimensions.

In all of these cars we have used lightweight chilled-iron wheels which have represented a reduction in weight of 680 lb. per car and frequent inspection of these cars has demonstrated their serviceability.

This car has been subjected to most severe static and live load vertical loading and high-speed impact tests. The A.A.R. representatives and railroad men were present and witnessed these tests. None of the members of the car structure was distorted. Of the approximately 14,000 spot welds in the superstructure not one of them let go. In other words, we have proved that welded lightweight structures as represented by this car will assure the railroads of the ultimate in lightweight and strength, that the cars will not be on the repair track but in service, and the study of construction methods has convinced our company, and they have stated publicly, "This car can be produced without any premium in cost over the conventional riveted car."

As a further step in connection with the statement above, one of our freight-car-building plants is providing facilities and equipment has been ordered and will be installed for producing approximately 25 cars a day of this lightweight welded construction. The plans are to have this plant in operation within the first month of the coming year. The welding equipment will be largely automatic and the handling and fabrication will eliminate, as far as possible, manual handling.

Testing Car Structures

It might be of interest to give more information about the methods followed in making the tests. As we mentioned previously, after the lightweight welded box car was built it was thoroughly tested. In this series of tests we applied at approximately 125 positions on the car-body instruments which would record the stresses under both static and live load conditions, but, of course, the static condition means very little as compared with those of live load or impact.

These instruments we have known of for some few years, but we have not been able until this time to assure ourselves that we had the proper technique of the application, adjustment and determining the stresses which they recorded.

During the past summer we have been doing a lot of impact testing of car structures under extremely variable conditions and, through the aid of Professor Roy of the University of Illinois, who is at present associated with the Association of American Railroads, we reached such a point that we were positive that the results obtained were reliable that they could be used

for testing car structures without any questionable reservations.

The instruments record the stresses, whether they be compression or tension, their magnitude, the number of vibrations per impact, whether the impact produces a stress beyond the yield point of the material, how much was due to bouncing of load and how much to straight impact and whether any permanent set or deformation occurred in the members upon which they were pleased.

In order to make sure that our investigation was complete the 125 scratch gage instruments were applied at all critical stress points throughout the car body and other points to assure ourselves that there were no sudden changes in stresses and that the structure was acting as a whole.

The scratches or stress indications are recorded on a brass plate, chrome plated, and when removed from the tested member are placed under a microscope which has a definite magnification—about 75 diameters—and the readings of the various phenomena occurring during the impact are recorded and proper curves drawn to illustrate what has happened.

The recording of impact stresses, occurring as they do under certain localized conditions, permits the designer to make in most cases only a slight alteration and iron out the stresses even under this impact condition and thereby prevent any possibility of fatigue. This is the procedure we have followed on this lightweight box car.

There is another very interesting feature and that is the effect of impact as far as stresses are concerned upon the underframe and superstructure. Except at very low car impact speeds, which closely approach static conditions, the stresses are largely confined to the members of considerable cross-sectional area, presenting the most direct path for the transmission of the blow. The side sill and the floor stringers on an A.A.R. box car develop under usual operating conditions an infinitesimal stress as compared with the center sill which is in the direct path for impact forces transmitted through the coupler. This applies evidently to all types of construction even though the members are relatively held in place by the flooring. When the resultant line of buff or impact at the end of the car is raised due to the coupler horn hitting the striking casting it creates in the floor stringer and side sill considerably more stress but even then a fraction of the stress per sq. in. which occurs in the center sill. This brings out the fact that it is erroneous to give any great consideration under impact to the longitudinal members of the underframe other than the center sill as resistance to car impacts through the coupler.

Further indications point out that any buffing force that is applied along the underframe line has very little resistance from the superstructure. The fundamental of design is that under an impact on the underframe any use of metal or cross-sectional area in members other than the center sill to withstand buffing impacts is not an economic use of the material.

We have gone to the extreme to make these tests to determine just what are the stresses due to the impact blows at the end of the underframe of both passenger and freight cars and to prove the truth or the fallacies of the many theories that have been advanced in connection with lightweight car design and construction, so that proper protection may be provided to the passengers, lading and structure under these severe conditions.

The impact recording gages indicate that the coupler shank in all cases starts to deform at speeds well below where car PLM No. 501, the car we have exhibited this year, shows any stresses near the yield point. At

impacts of 10 m.p.h. the coupler shank had been stressed beyond the yield point of the material.

There seems to be a very marked effect on the stresses recorded in the framing members due to the characteristics of the draft gear. This is very clearly shown in various sets of impact readings which have been made with conventional draft gear and draft gear which produces better cushioning than the conventional gear. There are instances where the stress yield point was exceeded in certain members of the car structure with the conventional draft gear at impact speeds of 10 m.p.h. or a little less. With an improved cushioning device—which is really the office of the draft gear—we have readings which indicate that this point is reached at about 12½ m.p.h.

It has been the aim of our company constantly to study and analyze all the factors that enter into car design and construction. Then by means of the most exhaustive tests in the laboratory, on the test track and in service assure you as well as ourselves that equipment built as a result of these efforts will answer all operating requirements, have low maintenance costs, and have a satisfactory length of life.

Sinking Fund Hit As "Unsound Panacea"

SINKING funds are described as failures in their intended purpose and held to obscure the true picture of the corrective measures necessary to re-establish the credit set-up of the carriers on a sound basis, in a report presented to the Investment Bankers Association of America at its twenty-sixth annual meeting held at White Sulphur Springs, W. Va., November 3 to 7, inclusive, by the Railroad Securities Committee, Fairman R. Dick, chairman (adviser, finance and credit, to the American Association of Railroads). The support of this thesis is the major concern of the report which, as the committee points out, is an "attempt to weed out from the field of discussion certain proposals in regard to sinking funds which have been offered in many quarters as a remedy for the ills of the railroads."

The committee points out that, while, due to the growth of adequate knowledge concerning railroad finance, sinking funds were abandoned years ago as practical devices, the past few years have seen a revival and publicizing of the theory that sinking funds comprise a "cure-all" for the financial ills of the carriers. They propose to undertake a discussion of the subject, therefore, that such a fallacy may not further hinder the work of re-establishing the railroads' financial well-being.

"Sinking funds are an unsound panacea for railroad ills," the committee holds. They further assert that if sinking funds had been operating in the past they would not have materially reduced railroad debt nor, likewise, will their establishment in the future accomplish a great deal.

To clarify the argument, the report first offers a reminder that the financing of railroads under present-day demands for improvement and modernization requires a continuous flow of new capital. So long as this need exists, therefore, sinking funds are effective in reducing debt only, if, over a period of years, *the balance of earnings after reasonable return to investors exceeds the need for additional capital*. Elaborating upon this point, the report states: "Unless this balance does exceed the amount spent for additions and betterments,

the effect of sinking funds may be merely to retire some bonds with one hand while with the other hand new bonds are sold, unless of course stock capital is issued, and in the latter case the reduction in debt is due to the sale of stock and not to the sinking fund. In other words, financing improvements by sales of stock, or replacing debt by stock, results in a relatively lower debt, totally regardless of any sinking fund provision for retiring debt out of earnings."

Searching the record for the carriers from 1922 to 1930, inclusive, for the purpose of analyzing the railroad economy, the report finds that the net earnings of Class I roads (net railway operating income less fixed charges) amounted to \$3,162,000,000, while net additions and betterments during this period (after deduction of depreciation and retirements) totaled \$4,538,000,000.

If, on the basis of such earnings and expenses, the railroads had devoted none of their earnings to dividend payments, the report continues, "they would nevertheless have had, in effect, to overdraw their bank balances by \$1,376,000,000 before arriving at a point where they could consider debt retirement. If they had desired to devote a billion dollars to retiring debt, they would then have had to borrow an additional billion dollars through the issue of bonds and the net position would not have been changed. *These facts show that simply to have placed the railroads during this supposedly prosperous period in a position where they could avoid an increase in debt would have required net income larger by \$1,376,000,000 than it actually was, or in other words, \$4,538,000,000 instead of \$3,162,000,000 which was the actual balance of net railway operating income remaining after paying interest charges.* The theory that debt could have been reduced by diverting earnings to a sinking fund is thus seen to be fallacious because even assuming that no dividends whatsoever had been paid and that all available earnings from the direct operation of the railroads had been retained for railroad purposes, debt would not have decreased but would have been increased substantially."

On the basis of research into the records for the years before 1922, the report reaches a similar conclusion. It is, therefore, stated as a truism that "if the railroads are to reduce debt and make necessary improvements to their property out of net earnings, a substantial increase in earnings from what they have been in the past would be required. This was clearly recognized by the Federal Co-ordinator of Transportation, when he said in regard to proposals for sinking funds and similar expedients: 'All such provisions, however, are in one way or another an ultimate burden upon earnings, and if enforced they will inevitably require a higher standard of earnings than has been thought necessary in the past.'"

The report adds the comment that the railroad industry is too often considered a static one, which fallacy is in a measure responsible for the current misunderstanding of the real nature of sinking funds. Such criticism of the sinking fund, it is stated, does not mean to imply that sound financial policies are not important. The report contends only that such policies should be practical and "a study of the railroad industry for the last forty years shows definitely that it is not practical or even possible for the railroads to improve their property out of earnings and at the same time have a balance available to retire debt."

As a practical alternative scheme of financing, the report suggests the issue of stock and other non-fixed interest securities. "Given sufficient earnings during periods of prosperity, such a method of maintaining a sound capital structure is practical."

NEWS

Urges Transport Stand by Congress

Fletcher says declaration should instruct I.C.C. on adequate earnings

Adoption by Congress of a policy based upon sound consideration of public interest, assuring the railroads of fair treatment in the matter of rates and that the initiative of management will not be artificially interfered with by legislative mandate, was urged by R. V. Fletcher, vice-president and general counsel of the Association of American Railroads, in a speech on November 16, before the Peoria (Ill.) Transportation Club. Such a policy, Judge Fletcher said, would not only enable the railroads to meet the present critical situation which faces them in respect to both earnings and impaired credit but would end for all time the periodic recurrence of the so-called railroad problem.

"It should be recognized," Mr. Fletcher said, "that the railroads are entitled to earn a sufficient amount of money to pay their operating expenses and, in addition thereto, there should be a substantial return upon the value of the property. There should be a declaration by Congress to that effect, in the nature of instructions to the Interstate Commerce Commission, which is an agency of Congress. There should be an end of serious efforts to enact 'make work' laws, the only effect of which is to increase the expenses, in violation of the natural laws of trade and commerce.

"There can be no doubt that at the present time the railroads face a critical situation in the matter of revenues. In the situation which confronts them, obviously there is nothing which they can do but to apply for an increase in rates in an amount which would certainly seem to be modest. It is the belief of those most familiar with the practical aspects of the question that the actual increase, if granted as prayed, will amount to no more than 13 per cent of the existing freight rates. If this per cent is superimposed upon the rates in effect as authorized by the decision in Ex Parte 115, the average level of rates will not be higher than that which prevailed in 1930."

Mr. Fletcher said the railroads have been compelled to file this petition due to inadequate earnings in the past and rising costs of operation in recent years. Operating expenses, Mr. Fletcher said, are now

Rate Rise Needed for Balanced Economy

"The question of a 15 per cent advance in freight rates, which the railways have asked the Interstate Commerce Commission to authorize, involves no real conflict of rights or interests between the owners of railroad securities, on the one hand, and producers, shippers and the public, on the other hand," said Samuel O. Dunn, chairman of the Simmons-Boardman Publishing Corporation and editor of the *Railway Age*, in an address on Wednesday at the annual dinner-meeting of the Railroad Shippers' and Investors' Conference.

"The balance between the railways and other industries essential to the prosperity of all of them has been destroyed, and in the interest of all of them it must be restored. It has been destroyed by (1) increases in hourly wages, taxes and other costs in the railway and other industries that have been accompanied by (2) large advances in the prices of other industries, but that have also been accompanied by (3) actual reductions of freight rates. The balance between the railways and other industries can be restored only by advances in freight rates."

\$665,000,000 per year greater than they were in 1933, due to new taxes, higher wages, and advances in the level of material costs.

"In the matter of reducing expenses through improved operating methods, the railroads have gone about as far as they can," he continued. "In fact, their record in this respect has been a notable one, marked by conspicuous instances of improvement. No one doubts that the processes of recovery would be tremendously advanced if the railroads could be so rehabilitated as again to become purchasers of materials to a normal degree."

Mr. Fletcher called attention to the bill which has passed the Senate and is now pending in the House of Representatives to limit the length of freight trains to 70 cars. This bill, he said, while heralded as a safety measure, is in reality one to create jobs for a very limited number of men, probably not more than seven per cent of those employed on the railroads. Its enactment, he said, would increase op-

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Briefs Filed in Forwarding Case

Forwarding companies and railroads file exceptions to proposed report

Several briefs of exceptions to Examiner R. N. Trezise's proposed report in the freight forwarding investigation have been filed with the Interstate Commerce Commission. Included are those of forwarding companies—Acme Fast Freight, Inc., and National Carloading Corporation—and others from several railroads.

Examiner Trezise's report, which was abstracted in the *Railway Age* of September 25, page 411, held among 32 recommended findings that proper co-ordination of forwarder operations with railway service "is not to be found in the forwarder appearing in the transportation arena as a shipper but as a common carrier transportation agency . . . essentially as an express company" regulated under Part I of the Interstate Commerce Act. The proposed report's specific findings in the main were directed against abuses found to exist in the present set-up.

The Acme brief, a 256-page document, observes in closing that the proposed report "in some measure, rises above the atmosphere of suspicion and distrust with which this proceeding was initiated. So far from sustaining the view that forwarding inherently is vicious and evil, or that forwarders parasitically prey upon railroads or shippers, it reveals that the forwarding method has been beneficial to shipper and carrier alike." Acme believes, however, that in dealing with effects and symptoms the report "blinds itself to the basic cause responsible therefor and in complete disregard of the inherent and basic differences attempts to fit the transportation of I.C.C. freight in consolidated consignments to rules and practices which are designed solely for the movement of single commodities in carload lots."

The examiner, the brief goes on, "would remedy the alleged evils by destroying the industry." If the recommendations are adopted "independent and unsubsidized forwarder operations will be restricted to the point of extinction." On the other hand Acme thinks that "the entire problem is capable of solution—simple, complete and immediate, and without need of additional legislation."

"All that is necessary," the brief con-

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Armco Dedicates Unique Laboratory

Building with steel and glass blocks houses 12 research departments

A new structure of novel design, which was built at Middletown, Ohio, to house the research laboratory of the American Rolling Mill Company, was dedicated on November 5 with more than 200 scientists from all parts of the country participating in the ceremony. At a banquet in the evening, which concluded the day's activities, the dedicatory address was made by Charles F. Kettering, vice-president in charge of research of the General Motors Corporation. Addresses were also presented by George M. Verity, chairman of the board of the Armco Rolling Mill Company, and by Charles R. Hook, president. Dr. Anson W. Hayes, Armco's director of research, was toastmaster.

The new single-story research building, which cost \$280,000, embodies many products which were developed by the company's research organization. It represents the first use, on a large scale, of sheet metal in building construction. The building has a frontage of 250 ft. and a depth of 175 ft., providing 43,500 sq. ft. of floor space. It has a saw-tooth roof and the entire frame is of welded-steel construction with not a rivet driven in the structure.

Three of the exterior elevations are faced with combinations of porcelain-enameled iron sheets, stainless steel and glass block. The skeleton for the outside walls is formed of square metal tubing with similar tubing placed horizontally beneath the window sills and above the glass-block panels. All of the wall tubing is welded to the structural frame. In all sections, except at the glass-block openings, 20-gage galvanized panels, with flanges facing inward, are bolted to the framework and furnish the exterior wall covering. The interior walls of the laboratory section are covered with 22 gage flat steel sheets painted in two tones of gray.

The rear wall, saw-tooth gables and

most of the partitions in the laboratory section are of special insulated steel construction. The wall is formed with two thicknesses of light-gage sheet steel filled with a special mineral product similar to mica which possesses high sound-proofing and insulating qualities.

Ventilation and atmospheric conditions are controlled by two air-conditioning systems, one for the laboratory staff offices and one for the test shops and laboratory. Deep-well water is used for summer cooling.

There are 12 laboratories with complete facilities for specialized research. They include equipment for the testing of steel in process; welding methods with flat rolled materials; forged-steel car wheels; stainless steel; development of corrosion-resistant sheets and strip; iron strips for porcelain enameling; high-finished sheets for deep drawing; sheets for electrical uses; development of zinc and other metal coatings for sheets; development of non-metallic coatings and the improvement of surfaces to hold these coatings; blast-furnace, open-hearth and electric-furnace experiments.

Latimer Re-appointed to Rail Retirement Board

President Roosevelt on November 16 sent to the Senate the name of Murray W. Latimer to be a member of the Railroad Retirement Board for a term of five years from August 29, last. Mr. Latimer, who is chairman of the Retirement Board, was re-appointed for this term during the recess of the Senate.

Grain in Central Territory

The Interstate Commerce Commission has found unreasonable and unduly preferential and prejudicial rates on grain, grain products, and grain by-products, in carloads, from Minneapolis-Duluth and related points, and from Missouri river cities (Omaha, Nebr., and Council Bluffs south the St. Joseph, Mo., and Kansas City) to destinations in Central territory. The report in No. 15037, Southwestern Millers' League et al v. Atchison, Topeka & Santa Fe Railway Company et al, and cases grouped therewith, prescribes reasonable and non-preferential rates for the future.

Forwarders Seek Status Settlement

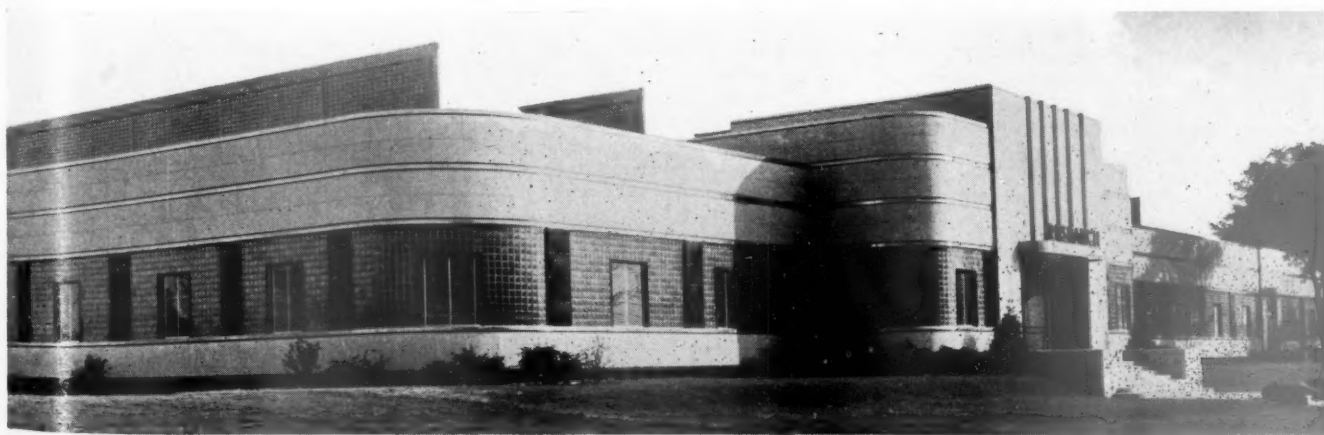
Case reopened in attempt to fix status under Motor Carrier Act

The status of freight forwarders was again before the Interstate Commerce Commission on November 11 when oral arguments were held at Washington, D. C., in the case involving Acme Fast Freight, Inc., which was decided by Division 5 last July but subsequently reopened for reargument before the full commission. Acme had sought a common carrier certificate under the Motor Carrier Act for all of its interstate operations, but Division 5 held that the applicant was subject to federal regulation as a broker with respect to all of its activities, save those involving the actual operation of motor vehicles.

At the November 11 session arguments were presented on behalf of Acme by J. R. Turney; National Carloading Corporation was represented by Robert E. Quirk; American Trucking Associations, Inc., by E. S. Brashears; and the Michigan Motor Freight Lines by K. F. Clardy. When Mr. Quirk arose to speak he was asked if he also represented the Universal Carloading & Distributing Company, the largest forwarder. His negative reply brought from Commissioner Eastman a remark to the effect that apparently Universal, the largest operator, is "entirely indifferent" to the issues in the case.

Acme, Mr. Turney said, takes the position that its operations are entirely under the Interstate Commerce Act—to the extent that they are not under Part I they are under Part II, and if they are not under Part I at all, then they are all under Part II. He explained the Acme plan of operation, asserting that his client has all the obligations and duties of a common carrier. Its annual revenue is about the same as the Pennsylvania's I.C.I. revenue; and the revenues of the three largest forwarders are 45 per cent of those earned by the entire interstate trucking industry.

Acme covers the whole country, serving
(Continued on page 740)



Porcelain Enamel, Stainless Steel and Glass Block Form the Exterior of the New Research Laboratories of The American Rolling Mill Company, Middletown, Ohio

I.C.C. Would Alter Motor Carrier Act

Eastman reveals regulatory body's plan to make report to Congress

Motor Carrier Act amendments desired by the Interstate Commerce Commission are now "under active consideration" by the regulatory body, which expects "to make a special report to Congress" on the matter, according to Commissioner Joseph B. Eastman's address at the annual meeting of American Trucking Associations, Inc., at Louisville, Ky., on November 16. After its two years' experience with motor carrier regulation, Mr. Eastman said, the commission is sure that the act "can be improved."

While unable to reveal "what amendments we shall recommend," the former co-ordinator did give his "personal opinion on one phase of the matter." He wants to see the act amended "so that we shall have, in proper cases, more power to act without public hearings and more discretion, even when hearings are held, to eliminate the step of a proposed report."

"I also hope," he continued, "that we can arrive at a workable plan which will enable many minor matters to be dealt with directly, in the first instance, by our field organization. The motor carrier industry is very different from the railroad industry, as we all know. It is essentially an industry of small units scattered in great numbers all over the country. Regulation must be brought close to home to that multitude of small operators. In other words, it must be decentralized as far as possible. Quick decisions on the spot, even if they are not always right, will in many instances be far more acceptable than long-delayed decisions from Washington. I realize the legal and practical difficulties in the way of any such plan, but I believe that one can be worked out."

Mr. Eastman's address was, in the main, a survey of the commission's performance under the Motor Carrier Act. The regulatory body's "worst fault," as he sees it, "has been our frequent inability to act as promptly as the best interests of all concerned require." He thinks that steps to correct this situation should include larger appropriations for a more nearly adequate staff; improvement of the commission's procedural methods insofar as the present law permits; and the above mentioned amendments to the act.

Turning from the hurling of "brickbats" to the presentation of "bouquets," Mr. Eastman praised the motor carrier industry for the manner in which it has co-operated with the commission, referring in this connection specifically to the work of A. T. A. He did not, however, want "these kind words" understood to mean that he regarded all motor carriers as "law-abiding citizens, keenly alive to their duties and responsibilities. . . . There were snakes, we are informed, even in the Garden of Eden."

Referring to the commission's work, Mr. Eastman mentioned the great flood of "grandfather" clause applications; the in-

surance problem, which is "well in hand"; the "considerable number" of "leading" cases which have been decided, disposing of "difficult and important legal questions"; the use of the tariff-suspension power "for the purpose of preventing destructive competition and promoting stability in the rate structure"; the "very excellent progress" made in the establishment of safety regulations; the "similar start" on hours-of-service regulations, which "we expect shortly to be able to make"; the investigation of motor vehicle sizes and weights which has just been instituted; the promulgation of accounting rules in connection with which "we hope soon to be able to take at least some positive steps"; and the investigation of cost-finding, which it is hoped will produce data "of the utmost value in bringing under proper control the competition in rates, often of the cut-throat type, which is now being carried on, particularly between the railroads and the motor carriers."

Supreme Court to Review Car Spotting Case

The United States Supreme Court on November 15 noted probable jurisdiction in a case involving an appeal from a decision of a lower federal court which granted an injunction against Interstate Commerce Commission orders prohibiting railroads from making allowances to industries which do their own car spotting. In the case—United States et al v. Humble Oil & Refining Company et al.—a three-judge court granted the injunction, holding that the spotting services involved constituted transportation services, subject to the commission's regulations only as to the reasonableness of the allowances.

MOP Trustee Is Senate Witness

As sessions of the Senate sub-committee investigating railroad finance were resumed on November 12, the committee examined Guy Thompson, trustee of the Missouri Pacific, regarding his relations with the officers of the bankrupt road. He said that he had had considerable difficulty at times in getting the co-operation of William Wyer, secretary-treasurer of the MOP, who has offices in Cleveland. Mr. Thompson also expressed the belief that holding companies in the MOP case had increased the difficulties of reorganizing the road. W. Lloyd Kitchel, counsel for the Stedman committee, acquiesced in this opinion.

On November 17 the Senate committee examined Edward C. Delafield, chairman of the general and refunding bondholders' committee, with reference to his part in the drafting of a reorganization plan for the MOP. George H. Walker, of the New York firm of G. H. Walker & Co., was questioned on activities of the bondholders' committee for the New Orleans, Texas & Mexico.

In its coming sessions the committee plans to look into the part the large insurance companies have played in recent railroad reorganizations. The witnesses will be Frederick H. Ecker, vice-president of the Metropolitan Life Insurance Company, and Fred P. Hayward, vice-president of the John Hancock Mutual Insurance Company.

Commission Holds Its "Field Day"

Widely divergent views are expressed by counsel as to meaning of Sec. 77

After two full days of argument by some of the most eminent counsel in the country who have devoted their legal work almost exclusively to reorganization cases, it became clearly evident, upon the conclusion of the Interstate Commerce Commission's "field day" which was held on November 16 and 17, that there were many divergent views as to precisely what Section 77 of the Bankruptcy Act really means; but it was also possible, after carefully examining the theories and opinions of the various legal lights, to classify the theories into two so-called schools of thought.

One school of legal opinion, whose most ardent legal champion is Ernest S. Ballard, of the Chicago law firm of Pope & Ballard and who is counsel for the Chicago & Eastern Illinois and the Missouri Pacific in their reorganization cases which are now pending before the commission, holds that the Congress intended that Section 77 should be a "composition" statute which was enacted to protect the debtor roads from having their property sold at a foreclosure sale during the depths of the last depression. This school claims that the act was intended to allow the debtors to make a composition with their creditors, or a full settlement of their debts on a percentage basis.

The other group, which is composed almost exclusively of the large institutional investors and is led by Robert T. Swaine, of the New York law firm of Cravath, de Gersdorf, Swaine & Wood, reorganization counsel for the Chicago, Milwaukee, St. Paul & Pacific and counsel for large first mortgage bondholder groups in the Spokane International and the Western Pacific reorganization cases, contends that Congress had no intention of changing the substantive rights of creditors in enacting the law and that Section 77 makes only procedural changes in the old Bankruptcy Act.

The commission had originally set November 16 and 17 as the dates for the oral argument in the Spokane International and the Western Pacific cases, but in view of the fact that they were the first two major reorganization cases to reach the stage of oral argument before the commission, and in view of the great interest manifested by leading counsel interested in other reorganization cases pending before the commission, the commission decided to hold a "field day," in which it invited these other counsel to appear as amici curiae, or friends of the commission, to give the commission the benefit of their opinions as to what Section 77 really meant and what the course of the commission's action should be in expediting the reorganization cases now before it.

In opening the discussion on the Spokane International case on November 16, Mr. Swaine charged that the Spokane International had been unfairly dealt with by its parent company, the Canadian Pacific,

and went on to suggest that had the Canadian Pacific dealt with its subsidiary company as it did with other lines in regard to divisions of rates, there would have been no deficit in the years 1930-1935. He went on to say that the bondholders whom he represented want a minimum division of 25 per cent for the Spokane road under the reorganization plan. He characterized the Bureau of Finance plan as "astounding in its violation of the public interest."

Mr. Swaine also told the commission that one-third of the funded debt of the railroads of the United States is held by institutional investors who are not allowed to hold preferred stock. He warned that if the commission did not solve this question of railroads continuously having to resort to bankruptcy proceedings to reduce their fixed indebtedness, in a short time institutional investors would have lost faith in the railroads, with the inevitable result that the government would be forced to take them over, or at least furnish the necessary capital to finance their needed improvements. Many times during the two days of argument was the commission to hear this veiled threat from counsel for various institutional interests.

Coming to the features of the reorganization plan, Mr. Swaine said that in his opinion the income bonds should be long-term and that a sinking fund should be set up. He also thought that the income bonds should be neither fully cumulative or fully non-cumulative. Severely criticizing the plan of reorganization proposed for the Spokane road by the commission's Bureau of Finance, Mr. Swaine warned that his committee, which made up 34 per cent of the first mortgage bonds, would never, in any sense, assent to a plan such as that proposed by the Bureau. He severely criticized the Bureau for handing down plans which are "grossly unfair and lacking in all consideration of the facts." For the first time during the "field day," but not for the last time, the commission heard from Mr. Swaine the concrete suggestion that the Bureau should call in parties to the reorganization and discuss the plan around a conference table. But, he said, they should not attempt to hand down a complete plan as they did in the Spokane case and the Western Pacific case. Rather, he said that it would be preferable to hand down an "interim" order which would include only general principles from which the parties could work out a definite plan.

Mr. Swaine also appeared in the Western Pacific case on November 17 and severely criticized the Bureau's plan for this carrier, calling it "grotesque." He again warned the commission that it would destroy railroad credit if it eliminated fixed charges in reorganization cases. He also said that his bondholders desired to elect a majority of the board of directors until such a time as the earnings of the Western Pacific should reach a normal level. The opinion was also expressed by Mr. Swaine that the problem of junior securities was the "hardest nut to crack" in this case. Regarding the subject of new money, he said that the Bureau makes its worst discrimination with reference to creditors, and called the terms for new money, as proposed by the Bureau, far too favorable. Mr. Swaine made an ominous prediction

when he told the commission that if it affirmed the plan similar to that proposed by the Bureau, the two properties, meaning the Spokane and the Western Pacific, would be in litigation for a period of at least five years. He closed his appeal by pleading with the commission to simplify the problems of the various parties by enunciating some final principles regarding fixed charges, income bonds, cumulative and non-cumulative features of bonds, no par value of stocks, and the rights of priorities. If the commission made some definite pronouncements on these obviously difficult questions, it would greatly facilitate the problems of the bondholders and the debtor in working out a sound and workable plan, said Mr. Swaine.

Mr. Kenneth F. Burgess, counsel for large institutional investors, in discussing Mr. Ballard's "composition" theory, called it "amazing" that now the stockholders should claim that part of the rights of bondholders should be transferred to the stockholders. He took the position that Section 77 made no change in the substantive rights of parties and cited the legislative history of the act for proof of his contention. He told the commission that the Bureau's proposed report in the Spokane case failed to follow the principles of law which are that "a man should pay his debts, and that stockholder rights are junior to bondholder's rights."

Mr. Ballard, who appeared as a friend of the commission, presented a lengthy brief in support of his contention that Section 77 was a "composition" law. He went into detail regarding the legislative history of the act and read to the commission specific passages from the speeches of Congressmen who were both in charge of the bill when it was originally passed in 1933 and when it was amended in 1935 which left little doubt in one's mind that the Congress was proceeding on the "composition" theory when the bill was enacted into law. He also cited many decisions of the Supreme Court in support of his contention. He held that the warrant provision of the law could only be explained on a "composition" basis.

Appearing as counsel for the mutual savings banks, F. N. Oliver told the commission that the "solution is not to be found in scaling down debt." He expressed the belief that rates must be high enough so that earnings will be sufficient to induce new capital into the industry.

W. Lloyd Kitchell, counsel for the Stedman committee in the MOP case, appeared briefly as a friend of the commission in opposition to Mr. Ballard's theory. He said that in his opinion Section 77 was not a "composition" statute, although it had certain elements of composition in it.

Leslie Craven, former counsel for Coordinator Eastman, told the commission that he had been a putative father of Section 77 and that it was his idea in helping to draft the statute that it was not intended to be a "composition" statute, but rather a "codification of equity practice." He went on to warn the commission that the approval of Mr. Ballard's suggestion would "destroy" railroad credit.

Appearing both as a friend of the commission and as an active participant in the reorganization of railroads, both as a repre-

sentative of various bondholder interests and as a co-receiver for the Seaboard Air Line, Col. H. W. Anderson characterized Section 77 as a very simple statute. He also criticized the commission for the lengthy records in the cases now before it and warned that unless the records in these cases are kept down in size, the law will break down. He also suggested that the various parties be called before the Bureau of Finance for a round-table discussion in an attempt to work out some of the problems involved.

Luther M. Walter, co-trustee of the Chicago Great Western, held that Section 77 was passed under the power of Congress to regulate commerce. He made the suggestion that the Bureau of Finance should require a fair division of rates as a part of the Spokane plan. Mr. Walter also served notice on the commission that he would strenuously advocate the pooling of revenues which will accrue if the 15 per cent is granted in an effort to help the weaker roads get out of bankruptcy. He said that if the strong roads would forego their increased profits for a year or two, they could solve the problem of bankrupt roads.

Appearing as counsel for the debtor in the Western Pacific case, F. C. Nicodemus reiterated his belief that Section 77 was a "composition" statute which was passed for the relief of debtors. He went on to say that Congress intended to protect debtors from foreclosure sales at bankrupt prices. He also expressed the view that if the commission would sit down with the various parties in the Western Pacific case, an acceptable plan could be worked out at one sitting. He discussed the condition of the property of the Western Pacific and said that it was now in the best condition that it had ever been in. He characterized the Northern California Extension as a "great success." Anticipating a question from Mr. Swaine as to what the equity offers for the bondholders foregoing their accrued interest, Mr. Nicodemus said that the equity offered the bondholders the present management and a rehabilitated property which was in an excellent position to earn all its fixed charges and a fair profit.

R. G. Coulson, representing the A. C. James Company, a secured creditor of the Western Pacific to the extent of \$5,000,000, contended that Section 77 was workable. He criticized the Bureau plan as unworkable.

H. C. McCollom, appearing for the trustee under the general and refunding mortgage bonds of the Western Pacific, told the commission that a dispute had arisen between his trustee and the trustee of the first and refunding mortgage bonds as to whether or not the lien of the first mortgage covered both the equipment of the road purchased under the equipment trusts and the Northern California Extension. He contended that his mortgage lien covered the equipment and the Extension, while Orville W. Wood, of counsel for the first and refunding mortgage bonds, held that it did not. Mr. Wood's position was that the first mortgage bonds constituted a lien on all the property of the debtor. Mr. Swaine also took this position.

Daniel Willard, Jr., counsel for the Railroad Credit Corporation, supported the

theory of Mr. McCollom. He also said that he subscribed to Mr. Ballard's theory of "composition," but that he did not believe, as does Mr. Ballard, that if "composition" fails, the plan of reorganization necessarily fails.

Cassius M. Clay, representing the Reconstruction Finance Corporation, denied that it is objecting to the capitalization as proposed by the Bureau in its plan. He also stated that the R. F. C. was now under no commitment regarding the furnishing of new capital for the Western Pacific reorganization plan. He accused the James Company of writing a plan so that they would come out with 40 per cent of the common stock of the road. The R. F. C., according to Mr. Clay, wants to see a workable plan come out of this case. He also strongly endorsed the conference method and said that the Western Pacific case furnishes an excellent "laboratory" for experimentation with this type of procedure. The R. F. C. takes the position that the bonds they hold under the general and refunding mortgage are fully secured, thus tacitly indorsing the theory that the first mortgage lien does not cover either the equipment or the Northern California Extension. He also expressed the opinion that if the conference method fails, the commission would not be estopped, since it could still file a plan with the court.

As it appears after the conclusion of the two days of oral argument, there exists at the present time a definite possibility that the Western Pacific case may have to be thrown back into the court to adjudicate the respective rights of the first and general mortgage bondholders. Also, if the commission does not radically change the plans of both roads as proposed by the Bureau of Finance, enough of the parties in interest will refuse to ratify the plan, with the result that they will be sent back to the courts. What will happen then, seemingly very few lawyers or members of the commission appear to know at this time. One thing seems pretty clear now; that is that there will be little progress made in railroad reorganization until there is a clarification of Section 77 by the Supreme Court. Perhaps either the Spokane case or the Western Pacific case will provide the vehicle whereby the Court may say whether this statute is a "composition" statute or merely a "codification of equity practice."

N. J. and Penna. Boards Postpone Intrastate Rate Rises

Intrastate freight rate rises to conform with the boost in interstate rates on specified commodities authorized by the Interstate Commerce Commission in its Ex Parte 115 decision (see the *Railway Age* for October 30, page 601), which were filed by carriers operating in the two states to become effective November 15, have been suspended pending scheduled hearings by the Board of the Public Utility Commissioners of New Jersey and the Pennsylvania Public Utility Commission, respectively. An order of the New Jersey board provides that the rate increases shall be suspended until February 15, 1938, and calls for a hearing for "determination of the reasonableness of the rates" to be held

in Newark, N. J., on November 23. A similar hearing has been set by the Pennsylvania commission for November 24, in Harrisburg, Pa.

Freight Car Loading

Loading of revenue freight for the week ended November 6 totaled 732,145 cars, a decrease of 39,510 cars or 5.1 per cent below the preceding week, a decrease of 27,470 cars or 3.6 per cent below the corresponding week in 1936 and a decrease of 149,372 cars or 16.9 per cent below the same week in 1930. All commodity classifications showed decreases under the preceding week, while all commodity classifications except grain showed decreases under last year. The summary, as compiled by the Car Service Division, Association of American Railroads, follows:

Revenue Freight Car Loading			
For Week Ended Saturday, November 6			
Districts	1937	1936	1935
Eastern	151,299	157,442	139,387
Allegheny	131,992	149,931	123,214
Pocahontas	51,143	53,159	48,621
Southern	109,028	108,902	92,434
Northwestern	95,109	108,913	85,745
Central Western	128,703	118,923	109,356
Southwestern	64,871	62,345	56,190
Total Western Districts	288,683	290,181	251,291
Total All Roads	732,145	759,615	654,947
Commodities			
Grain and Grain Products	43,873	29,330	30,589
Live Stock	18,429	19,077	18,930
Coal	142,054	151,118	124,470
Coke	7,635	11,314	6,715
Forest Products	32,488	32,541	27,701
Ore	23,272	38,791	17,454
Merchandise	167,591	168,843	164,363
Miscellaneous	296,804	308,601	264,725
November 6	732,145	759,615	654,947
October 30	771,655	814,514	681,998
October 23	773,353	816,242	710,621
October 16	809,944	826,525	732,304
October 9	815,122	820,570	734,154
Cumulative Total, 45 Weeks	33,788,309	31,030,606	27,332,082

In Canada.—Car loadings for the week ended November 6 dropped from 59,689 for the previous week and 57,983 for the corresponding week last year to 56,987, according to the compilation of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
November 6, 1937...	56,987	26,978
October 30, 1937...	59,689	27,104
October 23, 1937...	61,349	27,510
October 31, 1936...	57,983	25,943
Cumulative Totals for Canada:		
November 6, 1937...	2,245,581	1,169,758
October 31, 1936...	2,082,639	1,018,713
November 2, 1935...	1,994,945	936,046

Commission Hears Arguments in Stoker Case

The automatic stoker case was brought one step nearer to its conclusion when the Interstate Commerce Commission on November 15 heard oral argument on Examiner King's proposed report summarized in *Railway Age* for September 25. Appearing for the railroads were A. G. Gutheim, J. H. Wright, C. P. Lewis, Jr., and Carlton Meyer. Mr. Gutheim discussed the subject of firemen's fatigue and pointed out the fact that fatigue can be and has largely been overcome by lengthening the time the fireman is off between runs. The subject of safety was briefly discussed by Mr. Wright who contended

that the use of automatic stokers had not decreased the number of crossing accidents one iota. Mr. Lewis expressed the opinion that the railroads felt that Examiner King's estimate of \$3,000 as the cost of installation was much too low. He also insisted that the figure of 3,500 locomotives which would have to be equipped with automatic stokers to comply with the examiner's proposed order was too low. Mr. Lewis attempted to introduce into the record figures which purported to show how many engines the various lines would have to equip with stokers and what they estimated the cost to be. After objection to this request by counsel for the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen and Enginemen, Chairman Miller ruled that it was too late to admit this evidence as the record was already closed.

Mr. Meyer, representing the Delaware & Hudson, attempted to point out the differences that existed on its line, stating that the fireman had to shovel coal only about 40 per cent of the time due to the large number of steep grades. He also stated that the D. & H. had no stoker-equipped locomotives at the present time.

Appearing as the chief counsel for the brotherhoods, George M. Morris told the Commission that they were contending for a classification in the commission's order in this case which would require all locomotives of a weight on drivers of 125,000 pounds to be used in through, fast freight service and all locomotives weighing 150,000 pounds on drivers which are used in through, fast passenger service to be equipped with stokers. Examiner King, in his proposed report, had defined the weight limits as 170,000 pounds for passenger service and 185,000 pounds for freight service. From listening to the arguments of the brotherhoods' lawyers, it appeared that they would not seriously object if the commission adopted the recommendation of the examiner. H. N. McLaughlin and Timothy Shea also appeared briefly in support of the brotherhoods' contentions.

Ohio's Intrastate Coal Subject to Code

In what its own press release calls "a decision of outstanding importance" the National Bituminous Coal Commission on November 11 ordered that all coal sold in intrastate commerce in Ohio shall be subject to the provisions of the Bituminous Coal Act of 1937, effective December 15. A hearing to determine the same question with respect to Missouri coal is scheduled for November 29 at Kansas City, Mo.

The Ohio decision declared that substantially all transactions in bituminous coal in intrastate commerce in that state directly affect interstate commerce in such coal, and that if intrastate coal were not regulated it would impose undue, unreasonable or unjust discrimination against bituminous coal in interstate commerce.

Milwaukee Places First of New Locomotives in Service

The first of 30 steam freight locomotives being built by the Baldwin Locomotive Works for the Chicago, Milwaukee, St. Paul & Pacific was placed in service on

November 13 when it hauled 5,000 tons of coal in 65 cars from Chicago to the Twin cities and was exhibited en route in 60 towns. Officers of the Republic Coal & Coke Company and the Hickory Grove Mine at Latea, Ind., where the coal was mined, accompanied the train in a special car. The locomotive is of the 4-8-4 type, weighs 250 tons in working order, has a boiler pressure of 285 lb., and with the tender is 110 ft. in length. The driving wheels are 74 in. in diameter and are equipped with roller bearings, as are all other wheels on the locomotive and tender.

R. F. C. Loans to Railroads

The Reconstruction Finance Corporation's monthly statement for October shows the disbursements to railroads (including receivers) as \$537,126,239 and repayments as \$181,193,748, with \$346,512 being repaid during the month of October.

October Operating Revenue 4.9 Per Cent Under 1936

Preliminary reports from 87 Class I railroads, representing 78.9 per cent of total operating revenues, made public by the Association of American Railroads, show that those roads, in October, had estimated operating revenues amounting to \$293,545,220 compared with \$308,700,655 in the same month of 1936 and \$379,053,552 in the same month of 1930. The October gross was 4.9 per cent below October, 1936, and 22.6 per cent below October, 1930.

Freight revenues of the 87 roads in October amounted to \$239,993,472 compared with \$255,632,742 in October, 1936, and \$302,686,358 in October, 1930—6.1 per cent below the former, and 20.7 per cent below 1930. October passenger revenues totaled \$29,229,912—5.1 per cent above October, 1936's \$27,807,853, but 32.9 per cent below October, 1930's \$43,556,541.

Car Service Division Reports on 1937 Freight Traffic

While the volume of freight traffic, measured in cars loaded with revenue freight, was considerably heavier in the first six months this year than in the same period one year ago, a diminution in volume has taken place in the last half, according to a report of the Car Service Division submitted to the regular fall meeting of the member roads of the Association of American Railroads, in Chicago, November 19.

"Eliminating less than carload freight," the report said, "which measured in carloadings, does not fluctuate from time to time to the same extent as the strictly carload traffic, the records show that in the first quarter (13) weeks of 1937, carloadings were 17.1 per cent above the corresponding period of 1936; in the second quarter (second 13 weeks), loadings were 15.7 per cent over the corresponding period of 1936, and the loadings for the third quarter (13 weeks) showed an increase of 6.7 per cent over the corresponding period in 1936."

Loading of revenue freight in the first six weeks of the fourth quarter, October

1 to November 6, inclusive, was 2.8 per cent under the same period last year, the loading in each week this year since October 2 having been less than in the corresponding week in 1936.

Loading of all revenue freight, including l.c.l., in the first 45 weeks this year, that is from January 1 until November 6, totaled 33,788,309 cars. This was an increase of 2,757,703 cars or 8.9 per cent above the corresponding period in 1936 but a decrease of 6,998,258 cars or 17.2 per cent compared with the same period in 1930.

Not only are shippers loading freight cars more nearly to capacity but speed of freight trains has been steadily increasing, according to the report. In 1936, the average load per freight car was 36.3 tons, the highest on record. The previous record was established in 1930 when the average was 35.7 tons.

In the past fifteen years there has been a constant increase in the speed of freight trains, with the result that in the first six months of 1937 the average number of miles per train each day was 386.4 miles, or nearly 50 per cent greater than in 1923. In 1936 the average for the year was 379.2 miles, and in 1935 it was 384 miles.

Installation of new equipment so far this year has been greater than in any corresponding period since 1930, the Class I railroads in the first ten months having installed 62,911 new freight cars compared with 34,113 in the same period last year. The average capacity for all freight cars also continues to increase, it having been 49.20 tons on September 1 compared with 48.66 tons in 1936 and 43.28 tons in 1923. The average tractive power for steam locomotives also is greater now than at any time on record, amounting to 49,564 pounds on September 1, this year, an increase of 27.5 per cent compared with fifteen years ago.

Rate Increase Cases

The National Coal Association has filed with the Interstate Commerce Commission a motion to dismiss the petition of the railroads for an increase of 15 per cent in their freight rates. "The carriers' petition," says the Association, "tenders no issue except that of composite revenue need of all carriers as a group. Such a showing cannot possibly justify the further pyramiding of general increases of coal rates, which have always been subjected to heavy increases in general advances of rates and which have never (with the single exception of 1922) enjoyed a general reduction."

Meanwhile the railroad petition in Ex Parte 123 has been clarified by an exchange of letters between Judge R. V. Fletcher, vice-president and general counsel of the Association of American Railroads, and Interstate Commerce Commissioner Clyde B. Aitchison, chairman of the new Division 7 which the commission has created to handle the rate case. Judge Fletcher referred to the fact that Commissioner Aitchison had expressed the view that the railroad proposal "is not as clear as it should be with respect to the treatment intended to be accorded the rates on commodities involved in Ex Parte 115."

Judge Fletcher said that the petition's statement that the new increases shall apply to all rates (with the exceptions specifically listed) including those involved in Ex Parte 115 is intended "to refer not merely to the increased rates on the so-called heavy basic commodities which were specifically dealt with and found justified" in the Ex Parte 115 report, "but also to such increased rates on other commodities as may be published, subject to protest and possible suspension, under the permissive authority contained in that report." Commissioner Aitchison replied that Judge Fletcher's letter "will be given publicity so that all concerned may understand" the intention of the applicant carriers.

Commissioner Aitchison also addressed a letter to American Trucking Association in connection with the latter's petition for permission to intervene in Ex Parte 123. A. T. A. asked only permission to intervene and be treated as a party; it had not decided whether or not it would oppose or go along with the railroads. Its policy was expected to be determined at its meeting in Louisville, Ky., this week. Commissioner Aitchison's letter said that while in investigations of the character of Ex Parte 123 "it is not usual for parties who desire to be heard . . . to present petitions of intervention, in this particular case it seems desirable that the position of the section of the motor carrier industry which you represent should be clearly stated." Thus the petition "will be filed and will serve the purpose of a petition in intervention," it being understood that "your petition does not look to the entry of findings or orders as to members of your association, and that you are intervening merely upon the issues tendered by the rail carriers in their petition."

In Ex Parte 115 the commission has issued an order modifying outstanding orders in hundreds of cases to the extent necessary to permit the filing of tariffs carrying the Ex Parte 115 increases on commodities which were neither withdrawn nor specifically dealt with in the report in that proceeding.

I. C. C. Reviews Truckers' Status

The precedent-setting Scott Brothers case, involving the status under the Motor Carrier Act of railroad collection and delivery agents, was reargued before the Interstate Commerce Commission on November 12. As reported in the *Railway Age* of June 19, Division 5, with Commissioner Eastman dissenting, decided that Scott Brothers, an affiliate of the Pennsylvania, is a contract carrier by motor vehicle in its work of performing store-door service for the P. R. R. and Long Island at New York.

Counsel for seven different interests participated in the November 12 argument, with H. Z. Maxwell, assistant general counsel of the Pennsylvania, as lead-off man. The Pennsylvania's position is that technically and legally Scott Brothers, in its collection and delivery role, is a contract carrier. It suggested, however, that in view of the fact that, under the commission's decision in the pick-up and delivery case, the railroad has the right under Part I of the Interstate Commerce

Act to perform the services involved, it would be a duplication of regulation to require that a collection and delivery agent must prove the necessity for a permit to perform a service which that agent's principal in the premises already has the right to perform.

After the operation is started, however, Mr. Maxwell thinks that the pick-up and delivery agent is subject to the provisions of the Motor Carrier Act. The trucker, he said, is an agent of the railroads only in so far as the results of the store-door service are concerned—not as to the physical operation of the vehicle. A requirement that the trucker must obtain a permit, he said at another point, would bring difficulties to the railroad, which is often forced to go out and find a pick-up and delivery agent on short notice in cases where trucking companies fold up over night.

Speaking for Western railroads, R. S. Outlaw, general attorney for the Atchison, Topeka & Santa Fe, stated the position of those interveners to be one holding that collection and delivery service is not subject to the Motor Carrier Act; it is subject only to Part I of the Interstate Commerce Act. The effect of Division 5's decision, he said, is that the service is under Part I and the physical operation of the vehicle under Part II—a distinction which is not based on anything in the act.

If the operation involved is contract carriage under the Motor Carrier Act, then, Mr. Outlaw insisted, somewhere there must be common carriage under the Motor Carrier Act; you can't have this contract carriage "in the air"—you must have an underlying holding out. Continuing, he referred to "some of the maze of inconsistencies" into which Division 5's decision leads. The Motor Carrier Act, Mr. Outlaw added, was designed to regulate the relations of shippers with carriers, not those of railroads with their agents. Asked by Commissioner Caskie if he would be satisfied to have Scott Brothers a common carrier, Mr. Outlaw replied that such a status would perhaps be more logical than the contract-carrier finding, but he thinks, nevertheless, that the store-door trucker is entirely out from under the Motor Carrier Act.

The intervening Southern railroads, represented by R. B. Gwathmey, general attorney for the Atlantic Coast Line, took a position similar to that of Mr. Outlaw. If Division 5's decision remains in force, Mr. Gwathmey said, many operators in Southern territory would have neither the means nor the inclination to comply with the Motor Carrier Act. Some pick-up and delivery agents in the South, he explained, use horses, some use push-carts and others use oxen. Thus the decision, he said in closing, threatens us with a return "to the horse-and-buggy age or ox-cart days."

Scott Brothers is a common carrier under the Motor Carrier Act according to the view of American Trucking Associations, Inc., which was represented by E. S. Brashears. Mr. Brashears, in support of the A. T. A. position, cited as a "sound fundamental" the proposition that "wherever a common carrier operation is performed in interstate commerce by use of

motor vehicle, the common carrier responsible for that operation must have its authority from this commission in the form of a certificate of convenience and necessity." When any "fundamental intentions of the act" are deserted, Mr. Brashears continued, "we get ourselves into unjustly differing degrees of regulation for the performance of motor vehicle operations of similar character, grading down to no regulation at all."

The A. T. A. believes that all operations of Scott Brothers should have been subject to inquiry to determine "whether or not dual operations by this carrier are consistent with the public interest and the purposes expressed in the Motor Carrier Act." It is "informed from reliable sources that Scott Brothers constitute a link in the Pennsylvania's scheme of a truck line system"; and it thinks "that phase of their operations should have been and should be now a matter of investigation and finding."

F. O. Nelson, appearing for the Merchant Truckmen's Bureau of New York, held that if Scott Brothers is subject to the Motor Carrier Act, it comes in as a contract carrier, since it is serving not the public, but the Pennsylvania and Long Island. Mr. Nelson believes, however, that it is exempt as an operation within a municipal zone—unless it can be classed as part of a through transportation arrangement. He does not think that it is properly classified in that category, as he believes that provision of the act is designed to cover a motor carrier through its entire haul. It is Mr. Nelson's view that effective regulation is had when the carrier which comes in contact with the public is regulated—in this case the railroads. If all pick-up and delivery contractors are given permits, he added, they would be endowed with "a nuisance value."

The Cartage Exchange of Chicago, represented by A. B. Tanner, took the position that the collection and delivery trucker is a common carrier subject to the Motor Carrier Act, and that the commission was wrong in its pick-up and delivery decision. He, too, predicted that the commission faces "a maze of difficulties" unless it holds according to his contention.

C. E. Cotterill, representing the Middle Atlantic States Motor Carriers Conference, held that the transportation involved is carriage by independent common carriers—rail and motor. The controlling question, he continued, is not whether Scott Brothers is a contract or a common carrier—"it is a common carrier"—but whether it is subject to regulation. In order to bring the operation under Part I, Mr. Cotterill said, the finding has to be made that a railroad operation of motor vehicles is involved, whereas the fact is that an independent motor carrier performs the highway service. The principle of agency, he continued, has been applied to connecting common carriers; and he cited the decision of the United States Supreme Court in the Brooklyn Eastern District Terminal case as "a complete and unqualified authority on our contention that the mere fact of agency cannot change the status of a common carrier."

The only way that status can be expressed in the present case, Mr. Cotterill

suggested, is for the railroads to absorb in their line-haul rates the pick-up and delivery charges published by their terminal truckers. In this connection he urged upon the commission a consideration of its "consistent attitude" toward the little belt lines. Asked by Commissioner Eastman if he would have the store-door trucker a common carrier by railroad or by motor vehicle, Mr. Cotterill replied that the latter would be the proper status. Then, continued Commissioner Eastman, "you say that a common carrier by motor vehicle can be such in the performance of a railway service?" Mr. Cotterill replied in the affirmative.

Forwarders Seek Status Settlement

(Continued from page 735)

about 30,000 points; it issues bills of lading in standard form, and is the only "carrier" that is known to its shippers. Its charges are "fixed and definite," and, since N.R.A. code days, they have been published. Also, Acme's liability "is that of a common carrier." There are 183 key stations in the Acme operating scheme, which is designed "to so consolidate individual l.c.l. shipments that they will move the longest possible haul either as a carload or truck load." Mr. Turney called the set-up "superior to any other method for handling l.c.l." Asked by Commissioner Aitchison if Acme observed the fourth section, Mr. Turney replied in the negative.

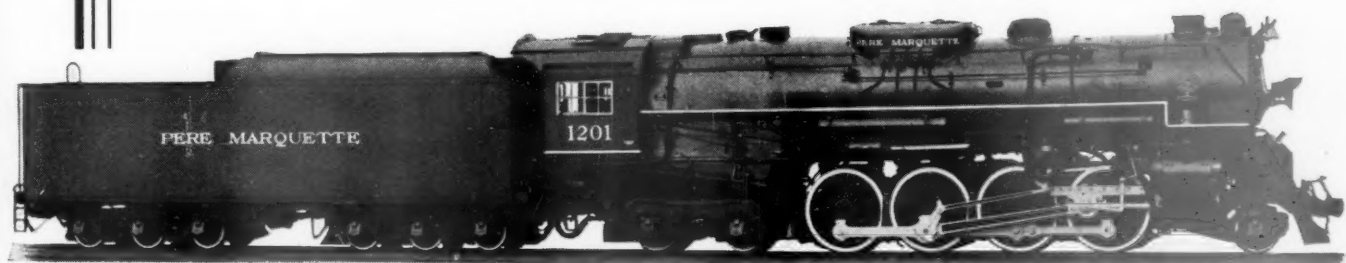
Directing his argument to that section of Division 5's report which expressed doubt as to the propriety of a forwarder's employing contract truckers, Mr. Turney explained Acme's practices in that connection, and asserted that the forwarder service to all points save the key stations depended upon a continuance of such arrangements. Acme, he added, cannot pay the combination of the local rates and handle this traffic which constitutes 40 per cent of its business. And it would want "to the nth degree" regulation of the compensation paid these contract truckers; and it thinks the commission has the power to impose such regulation.

Mr. Turney suggested at another point that the certificate sought by Acme could be limited by a stipulation that it be employed only in using certificated motor vehicles and railroads. Acme's status, he insisted, is that of a common carrier; and the fact that a carrier is also a shipper does not change its status as a carrier. A common carrier's role as an agency which "undertakes" to carry for all does not require personal performance, he said, adding that custody of the individual shipment is in the forwarder, while the railroad has custody of the consolidated shipment.

Mr. Quirk devoted most of his argument on behalf of National Carloading Corporation to the proposition that Acme is not a broker, as Division 5 held. The commission, he said, would be taking "an ostrich-like view" if it held that because forwarders are not subject "to this particular statute" they are not common carriers. It was Mr. Quirk's contention that

THEY PULL MORE

*at faster speeds
and lower costs*



MODERN locomotives, incorporating in a harmonious design proved factors that improve economy and lower costs, haul more tonnage at higher speeds and return larger net earnings from every train they move.



LIMA Locomotive Works Incorporated, Lima, Ohio

forwarders are common carriers at common law but have not been brought under the Motor Carrier Act. Division 5's decision, in Mr. Quirk's opinion, stretches "the brokerage provision to the breaking point." This brokerage provision he called "a pain in the neck," for unlike most regulation it purports to confer no benefits on those it regulates—it was merely put in to protect the public.

Mr. Clardy, for the Michigan Motor Freight Lines, took a position similar to that of Mr. Quirk, pointing out that the Motor Carrier Act makes no provision for any type of certificate except those covering the operation of vehicles. American Trucking Associations, said Mr. Brashers, cannot see how words definitely indicating inclusion can be twisted to force exclusion. This organization thinks that forwarders should be regulated as common carriers; that carriers used by Acme are entitled to certificates to continue to do what they were doing; and that Acme is entitled to a certificate to continue to do what it was doing. Thus A. T. A. would give Acme a certificate, limiting it to use over certificated carriers.

Urges Transport Stand by Congress

(Continued from page 734)

erating costs of the railroads by not less than \$100,000,000 annually.

"The effect of such a law," Mr. Fletcher added, "would be to turn back the wheels of progress and to put artificial limitations upon the efforts of the railroads to practice economies which would permit the business of the country at the present time to be carried at reasonable rates."

He also referred to the provision in the present Revenue Act, imposing a tax upon undistributed income, as "another legislative handicap to railroad progress."

"As applied to railroads," he said, "this measure has proven to be one of the worst handicaps with which the industry is confronted. For years, the railroads have been told by the Interstate Commerce Commission and by others in high governmental position that they must inaugurate a plan of debt reduction, by creating sinking funds or setting aside sums out of earnings to apply to the liquidation of funded debt. In numerous cases, the Interstate Commerce Commission has required railroads seeking the privilege of issuing securities to include in the plan a provision that a certain amount of money must be set aside out of earnings to reduce the debt. In Congress and elsewhere, there have been heard frequent severe criticisms of the railroads because, when debts fall due, they are not paid off, but are reissued without substantial reduction. And yet we have here a law which would heavily penalize the railroads for using any part of their net income for debt reduction."

"We hear a great deal about Government ownership. It is not my purpose to discuss that question here tonight. I know of no organized, intelligent sentiment in favor of such a drastic departure from our traditional American policy. Government

ownership, as has frequently been said, will come about only as the result of unwise legislative and administrative policies and because private ownership has not been permitted to handle the business in accordance with the sound judgment and experience of those responsible for railroad management. If private operation of the railroads fails because the Government will not permit earnings sufficient to sustain them and because there is a constant interference by Congress with managerial initiative and discretion, and if, as a result of these unwise policies, the Government is compelled to take over and operate the railroads, this will mark the end of the democratic principle of government, so that this beloved America of ours, in which all of us take such pride, will join the ranks of discarded experiments in democracy, which abide now only in the memory of scholars and historians."

Briefs Filed in Forward- ing Case

(Continued from page 734)

tinues, "is to deal realistically with forwarder traffic as a method of transporting l.c.l. freight. A finding that forwarders are in fact engaged as agents of the railroads in providing l.c.l. transportation, coupled with an order prescribing the mail pay or express basis of compensation would immediately bring forwarder operations within the regulatory powers of the commission, and at the same time eliminate the necessities for practices which are condemned in the report, and assure efficient, economical and profitable railway operation, serviceable to shippers."

Should the commission continue to treat forwarding as a traffic then Acme "respectfully insists that the rules and practices, which are essential in order to permit that traffic to be transported expeditiously, efficiently and economically, should not be proscribed, as recommended in the report." Unless and until the railroads themselves offer the service, forwarding companies which "have developed it and made it what it is should be permitted to continue to provide it under reasonable rules, practices and charges designed to encourage rather than throttle its development."

National Carloading Corporation, in its 58-page brief, suggested that irrespective of what the final status of forwarders under existing statutes is determined to be, the fact that they are common carriers, and that the larger ones have since March 1, 1936, submitted to jurisdiction under the Motor Carrier Act, "should not be ignored in deciding the issues raised in this proceeding." The aim of the commission, the brief continues, should be "to consider the practical problems that have been disclosed by the record and that confront the railroads and forwarders in handling less than carload consignments of freight; and, in the light of these conditions, to prescribe such rates and regulations as are suitable to these conditions, to the end that railroads and the public may make greater use of the forwarding method of transportation, either under existing law or under such amendments to

the law as may be necessary to accomplish these purposes."

The New York Central, to which the proposed report said Universal Carloading & Distributing Company "is linked . . . by a chain of three intermediate organizations," filed a brief declaring that Universal is not an "instrumentality" of N. Y. C. It adds that the most which can be found is that the Central has an indirect financial interest in less than a majority of the stock in the holding company that controls Universal. This road also joined with twelve others in another brief which asserted that forwarding companies as now operated are a specialized and efficient method of gathering and distributing traffic. It continues to say the forwarders serve a useful economic purpose; and so long as transportation rates vary according to the quantity of freight offered at one time the forwarders will have a field in which to operate. Also, it is contended, there is no proof of any unjust discrimination or undue prejudice between forwarder traffic and ordinary carload traffic; nor proof that anything in the present relationships between the forwarder and railroads necessarily involves violations of the law.

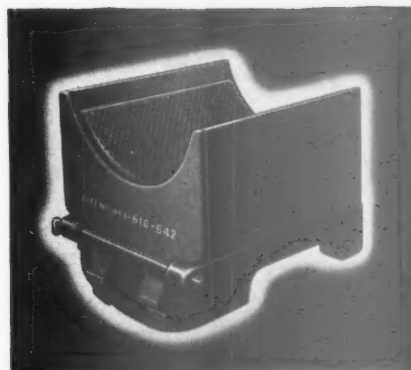
The Baltimore & Ohio brief declared it to be "apparent" that "so far as the forwarders have been successful in the service they have been performing for shippers it is due largely to the absence of regulation." This road would have the commission find that the forwarder is not essential to the efficient handling of merchandise traffic; that the B. & O. is able to provide as efficient and adequate service in the handling of such traffic as that now afforded by the forwarder; that the operations of the forwarder cannot be conducted as an agent of a rail line, or as an express service, from either a legal or a practical standpoint; and that every means should be open to the railroads for competing fairly and equally with forwarders and they should be relieved so far as possible within the commission's jurisdiction of regulation to which forwarders are not subject.

Among other railroad briefs was that of the Union Pacific which believes that forwarders afford a convenient and effective method of meeting water and truck competition; the Illinois Central, which would treat the forwarder "for what it is"—a common carrier agency of transportation who "has made a place for himself and is filling a public need"; the Chicago, Burlington & Quincy which believes that the adoption of the proposed report would be likely to impair the quality of the service now performed by forwarding companies with little, if any, corresponding benefit to any other shippers; the Wabash, to which forwarder traffic and operations are so vital that it hopes no "revolutionary changes or innovations" will be introduced by the commission "except upon convincing proof of their salutary effect"; the St. Louis Southwestern which would leave things as they are; and the New York, Chicago & St. Louis, which thinks that the relation of the forwarder to the shipper is that of an agent, while its relation to the railroad is that of a shipper.

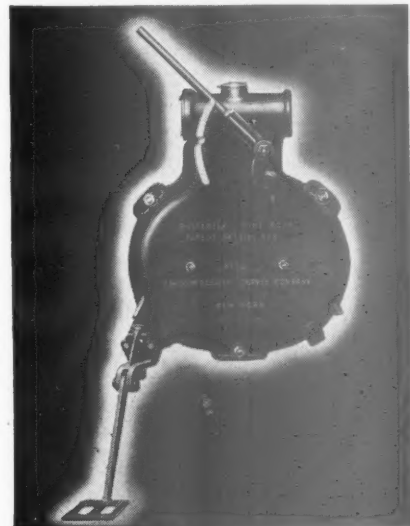
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REPLACEMENT PARTS WON'T S-T-R-E-T-C-H NOR COMPRESS

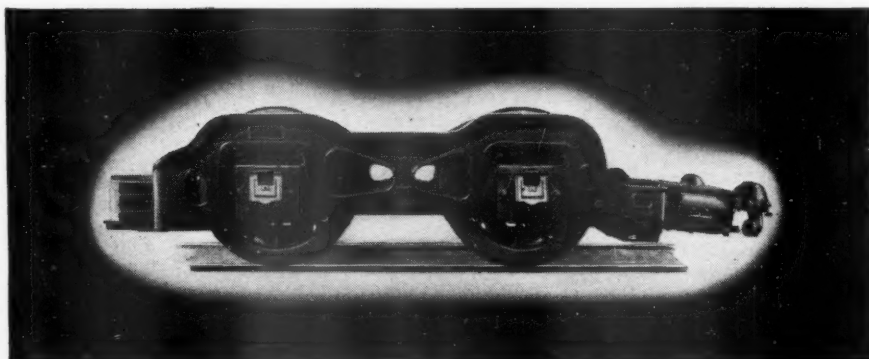
Replacement parts for locomotive accessories must fit accurately or there is undue labor for fitting or rapid wear in service. » » » Also, they must be made of materials suited for the intended service—and in many cases only extended experimentation and service tests can determine the correct material. » » » Franklin Replacement Parts for Franklin Devices are the result of careful development of the original device plus knowledge gained by watchful supervision in actual service. » » » They save labor costs in application and give prolonged trouble-free service. » » » Specify Franklin Replacement Parts for Franklin Devices.



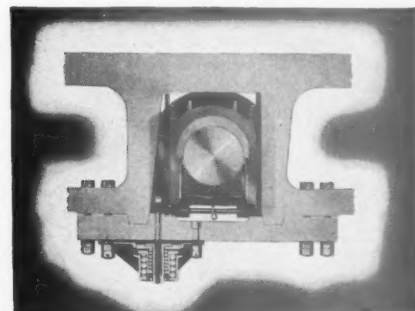
Franklin Driving Box Lubricator and Spreader



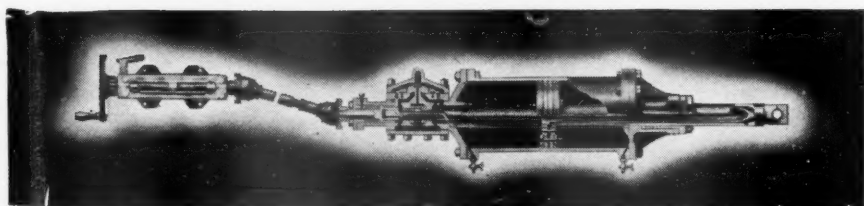
Franklin No. 8 Butterfly Type Firedoor



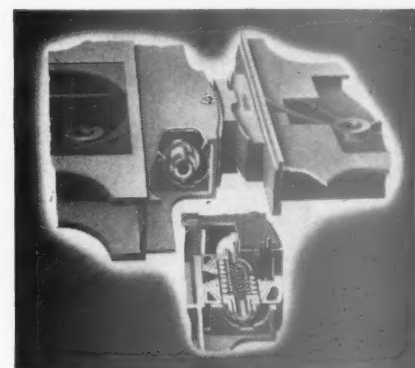
The Locomotive Booster



Franklin Automatic Compensator and Snubber



Precision Power Reverse Gear



Radial Buffer Type E-2



FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK

CHICAGO

MONTREAL

Equipment and Supplies

FREIGHT CARS

THE DULUTH, MISSABE & IRON RANGE has ordered 25 ore cars from the Pullman-Standard Car Manufacturing Company.

PASSENGER CARS

THE NEW YORK CENTRAL has ordered two light-weight coaches from the Edward G. Budd Manufacturing Company.

IRON AND STEEL

CENTRAL OF NEW JERSEY.—A contract has been given to the Bethlehem Steel Company for 830 tons of structural steel for use at Elizabethport, N. J. The Centaur Construction Company, Inc., New York, are the contractors.

THE SOUTHERN PACIFIC has ordered 35,333 tons of rails, placing 20,406 tons with the Tennessee Coal, Iron & Railroad Company through the Columbia Steel Company, 7,245 tons with the Colorado Fuel & Iron Company and 7,682 tons with the Bethlehem Steel Company.

SIGNALING

THE SOUTHERN PACIFIC COMPANY has placed an order with the Union Switch & Signal Co. covering the necessary electro-pneumatic interlocking materials for changes and additions at the 16th Street Tower, Oakland, Cal., including a complete new 23-lever electro-pneumatic interlocking machine with the necessary signals, electro-pneumatic switch movements, relays, impedance bonds, instrument cases and junction boxes, etc. The field installation will be carried out by the railroad company's forces.

MOTOR VEHICLES

THE NORFOLK SOUTHERN BUS CORPORATION has received delivery of one 36-passenger bus from the American Car & Foundry Motors Company.

Financial

ARKANSAS VALLEY INTERURBAN.—*Reorganization.*—The Interstate Commerce Commission, Division 4, has refused approval of any plan of reorganization of this company at this time without prejudice to continuation of the proceedings.

ATCHISON, TOPEKA & SANTA FE.—*Acquisition.*—This road has applied to the Interstate Commerce Commission for authority to acquire control of a 5.9-mile extension which the California, Arizona & Santa Fe proposes to construct out of Ennis, Ariz.

GREYHOUND CORPORATION.—*Preferred Stock.*—This company has applied to the Interstate Commerce Commission for authority to issue up to \$1,368,300 of 5½ per cent preferred stock for the purpose of paying a stock dividend equivalent to 50 cents a share on its common stock.

MISSOURI PACIFIC.—*Reorganization.*—Percy Cowan, of Chicago, and Joseph H. Zumbalen and John F. McFadden, both of St. Louis, Mo., have applied to the Interstate Commerce Commission for authority as a protective committee to solicit deposits of Plaza-Olive building first mortgage bonds.

MONTANA WESTERN.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to extend the maturity date from January 1, 1932, to September 1, 1947, of \$165,000 of first mortgage 6 per cent gold bonds.

OREGON, PACIFIC & EASTERN.—*Reorganization.*—This company has petitioned the United States District Court for Oregon for permission to reorganize under Section 77 of the Bankruptcy Act.

PUTNAM COUNTY.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire for \$25,000 a 1.75-mile line from Granville, Ill., to Mark, which was formerly owned by the Chicago, Milwaukee, St. Paul & Pacific.

SHELBY COUNTY.—*Abandonment.*—The receiver for this road has applied to the Interstate Commerce Commission for authority to abandon its 8.5-mile line from Shelbyville, Mo., to Shelbyna.

SHELBY NORTHWESTERN.—*Abandonment.*—The receiver for this road has applied to the Interstate Commerce Commission for authority to abandon its 21-mile line from a point near Shelbyville, Mo., to Novelty.

SOUTHERN.—*New Director.*—John K. Ottley, president of the First National Bank of Atlanta (Ga.) has been elected a director of this company to succeed Devereaux Milburn, who has resigned.

WILLAMINA & GRAND RONDE.—*Operation.*—This company has applied to the Interstate Commerce Commission for a certificate authorizing the operation of its line between Willamina, Ore., and Grand Ronde, 9 miles.

Average Prices of Stocks and Bonds

	Nov. 16	Last week	Last year
Average price of 20 representative railway stocks..	33.64	32.87	57.83
Average price of 20 representative railway bonds..	68.24	67.56	83.68

Dividends Declared

Cincinnati, New Orleans & Texas Pacific.—Preferred, \$1.25, quarterly, payable December 1 to holders of record November 15.
Green Bay & Western.—Capital, \$5.00, payable December 21 to holders of record December 8; Class A Debentures, \$50; Class B Debentures, \$15, both payable December 21. Last previous payment on all three classes made on February 23, 1937.
Pennsylvania.—75c, payable December 20 to holders of record November 20.
Pittsburgh & Lake Erie.—\$2.50, payable December 15 to holders of record November 19.

Supply Trade

The Republic Steel Corporation is merging several of its subsidiaries with the parent company, the plan for which provides that the plants be placed directly under Republic's general mortgage without new financing. The stocks of these subsidiaries originally had been pledged under the mortgage and upon their dissolution the physical properties are being substituted for the stock. These subsidiaries include the Berger Manufacturing Company and the Trumbull Cliffs Furnace Company, both of Canton, Ohio; the River Dock Company, Cleveland, Ohio; the Niles Steel Products Company, Niles, Ohio; and the Union Drawn Steel Company, with plants at Massillon, Ohio, Beaver Falls, Pa., Hartford, Conn., Gary, Ind., and Hamilton, Ont.

Howard S. Johnson, First National Bank building, St. Paul, Minn., has been appointed representative of The Apex Tool & Cutter Co., Inc., Shelton, Conn.

F. A. Barry, formerly of United States Rubber Products, Inc., has become associated with the sales staff of the Gustin-Bacon Manufacturing Company in New York.

Murray B. Wilson of the Detroit sales district office of the American Rolling Mill Company, Middletown, Ohio, has been appointed manager of the New York sales district, to succeed Cliff Spear, who has been forced to curtail his activities because of continued ill health.

The Railway Truck Corporation, 80 E. Jackson boulevard, Chicago, has been organized to manufacture and sell bolster friction springs and truck stabilizing devices for freight cars. Incorporators are W. W. Rosser, president; J. F. Ryan, vice-president; and A. C. Davidson, chief engineer.

The Ashton Valve Company, Cambridge, Mass., has been granted a Merit Award by the Associated Industries of Massachusetts (which represents 85 per cent of the industrial payroll in Massachusetts) for its illuminated quadruplex air-brake gage and illuminated double-dial steam gage. The Associated Industries of Massachusetts grant these awards for outstanding industrial developments by the state's industries.

OBITUARY

Homer D. Williams, former president of the Carnegie Steel Company and later of the Pittsburgh Steel Company, died on November 13, in the University of Maryland Hospital, at Baltimore, Md., at the age of 74 years. Mr. Williams had served 56 years in the steel industry at the time of his retirement in February, 1936.

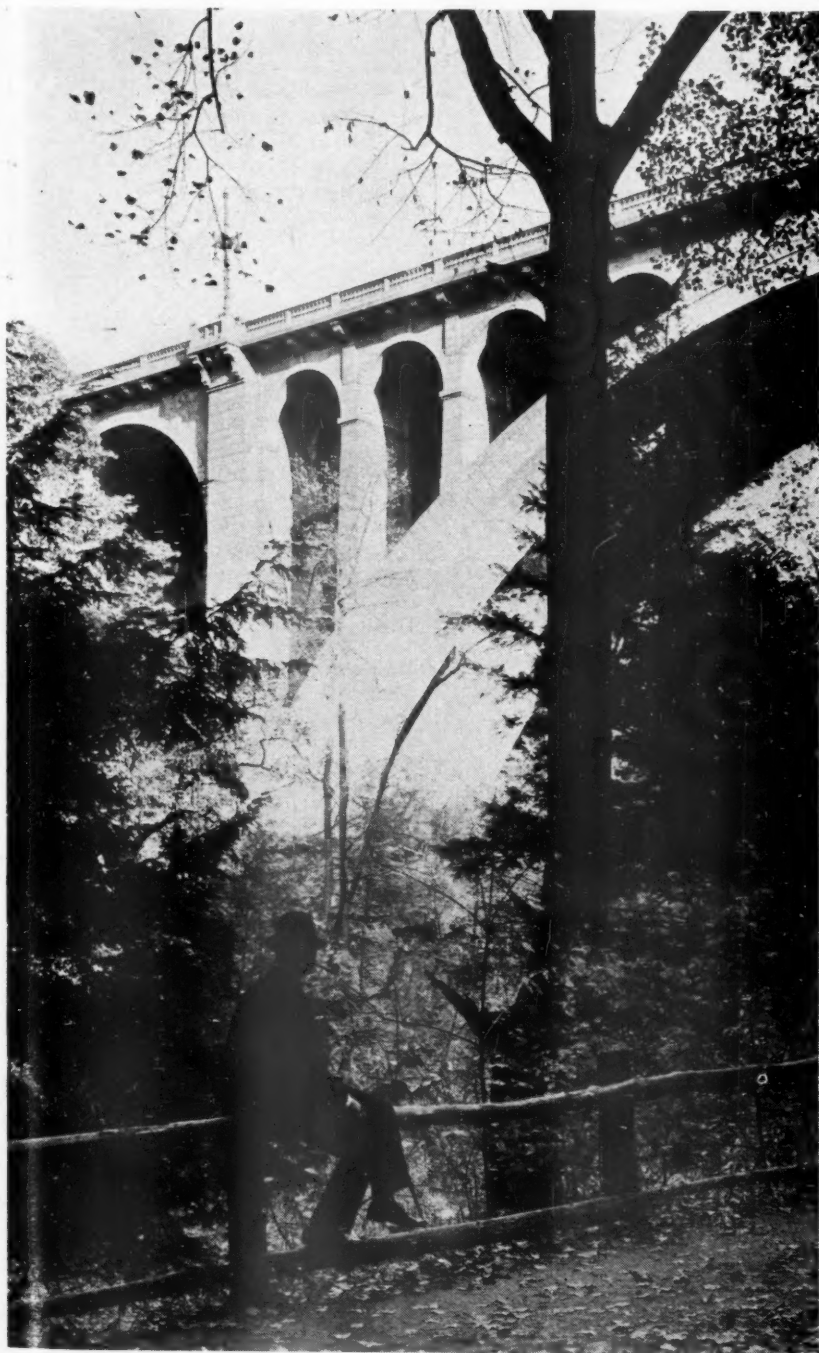
Charles C. Cluff, who retired in 1932, after serving as New York sales manager of the Carnegie Steel Company, the Illinois Steel Company and the Tennessee Coal, Iron & Railroad Company, died on

Continued on next left-hand page

NO. 41 OF A SERIES OF FAMOUS ARCHES OF THE WORLD

THE WALNUT LANE BRIDGE

PHILADELPHIA



The Walnut Lane Bridge, Philadelphia, combines permanence with exceptionally pleasing appearance well suited to its surroundings. The structure consists of one main arch having a clear span of 233 feet with a rise of 73 feet, and five other arches each having a clear span of 53 feet. The total length of the bridge is 585 feet. The bridge is designed for highway traffic and carries a 60-foot street at a height of 147 feet above the creek. The five approach arches are all semi-circular in form and each has two ribs or rings resting on twin shaft piers. Their general design conforms closely to that of the main arch.

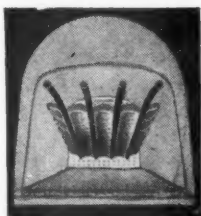
* * *

Security Brick Arches are correctly designed to compel every pound of fuel to develop its share of full boiler capacity. By every standard of value Security Arch Brick assures maximum economy.

THERE'S MORE TO SECURITY ARCHES THAN JUST BRICK

**HARBISON-WALKER
REFRACTORIES CO.**

Refractory Specialists



**AMERICAN ARCH CO.
INCORPORATED**

*Locomotive Combustion
Specialists* * * *

November 13, at his home in New York, at the age of 74 years. Mr. Cluff had been in the steel industry for about 50 years, until his retirement in 1932; he was the last of the three original incorporators of the United States Steel Corporation.

Construction

CENTRAL OF NEW JERSEY.—A contract has been let to the Centaur Construction Company, Inc., New York, for grade crossing elimination work at Elizabethport, N. J. The work involves the use of 830 tons of structural steel.

PENNSYLVANIA.—Contracts have been awarded for the construction of a car dumper and related facilities at Sandusky, Ohio (mentioned previously in the *Railway Age* of September 18), which will involve an expenditure of about \$4,000,000. The existing facilities of the Pennsylvania at Sandusky for the transfer of coal from cars to boats on Lake Erie consist of two car dumpers, capable of transferring nearly 100 carloads of coal an hour. Completion of the work involved in the contracts just awarded will increase the capacity of the facilities by 50 per cent. The proposed facilities include a new pier reaching nearly a mile into Sandusky bay and an additional car dumper. A contract for the construction of the dock and for the necessary dredging has been awarded to the Great Lakes Dredge & Dock Co., Chicago, while the construction of the car dumper will be carried out by Heyl & Patterson, Inc., Pittsburgh, Pa.

The dock will be approximately 4,500 ft. long and will have a width varying from 150 to 600 ft. It will be of cellular construction embodying steel sheet piling, with the cells being filled with rock and capped with concrete. The dock will stand 12 ft. above the water line. The car dumper, which will be erected on the new pier, will be electrically operated and will be served by a load yard with a capacity of 300 cars and an empty-car yard of 250 cars capacity. The new dumper will be capable of handling cars up to 120-tons capacity. The load yard is to be equipped with electric pusher engines and the empty-car yard will be served by car retarders. The entire improvement will be so constructed as to provide for future development and the installation of another car dumper together with additional car yards.

In addition to the construction of the dock, the work involved in the contract of the Great Lakes Dredge & Dock Co. includes the construction of a new dock channel along the east side of the dock, 400 ft. wide, and the construction of a new approach channel, 300 ft. wide and 8,000 ft. long, parallel with the existing ship channel and connecting with the entrance channel to Sandusky Bay, near Cedar Point. This channel work will involve 2,500,000 cu. yd. of dredging.

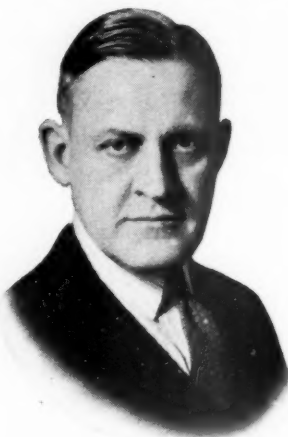
It is planned to start work on this project immediately so that these facilities may be completed and ready for operation for the navigation season of 1939.

Railway Officers

EXECUTIVE

H. J. Curran, president of the North Kansas City (Mo.) Bridge & Railroad Company, the North Kansas City Development Company and related concerns in the North Kansas City Industrial district, has been appointed to the newly-created position of executive assistant of the Chicago, Burlington & Quincy, with headquarters at Kansas City, Mo., effective November 4.

Charles S. Pope, who has been appointed executive assistant of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Minneapolis, Minn., as reported in the *Railway Age* of October 30, returns by such appointment to a railroad with which he was formerly connected in various executive capacities. Mr. Pope was born on June 1, 1896, at St. Paul, Minn., and attended the University of Minnesota. He obtained his first railroad experience in



Charles S. Pope

the Como shops of the Northern Pacific in St. Paul. In 1917 he entered the service of the Great Northern as a clerk in the office of the auditor of freight receipts, serving in this capacity until 1918, when he resigned to enlist in the Railway Division, Thirty-second Engineers, A. E. F. In 1919, following his return from the war, he served with various commercial concerns in St. Paul. In the following year he entered the service of the Soo Line as a clerk in the office of the auditor of disbursements, being appointed chief clerk to the assistant comptroller in 1923 and chief clerk to the comptroller in 1924. In 1926, Mr. Pope was made auditor of miscellaneous companies, and in 1928 he became assistant to the comptroller of the Soo Line. In the following year Mr. Pope became secretary and assistant to the comptroller of the Soo Line, the Duluth, South Shore & Atlantic, the Wisconsin Central, and the Spokane International and subsidiaries with headquarters at Minneapolis. In 1932, he resigned to become auditor and treasurer for the receiver of the Wisconsin Central. Later in the same year he was appointed assistant to the

trustees of the Minnesota & Ontario Paper Company and, concurrently with these appointments, he was also elected executive vice-president of the International Lumber Company, executive vice-president of the Insulite Company and to the same office in other subsidiaries of the paper manufacturing firm.

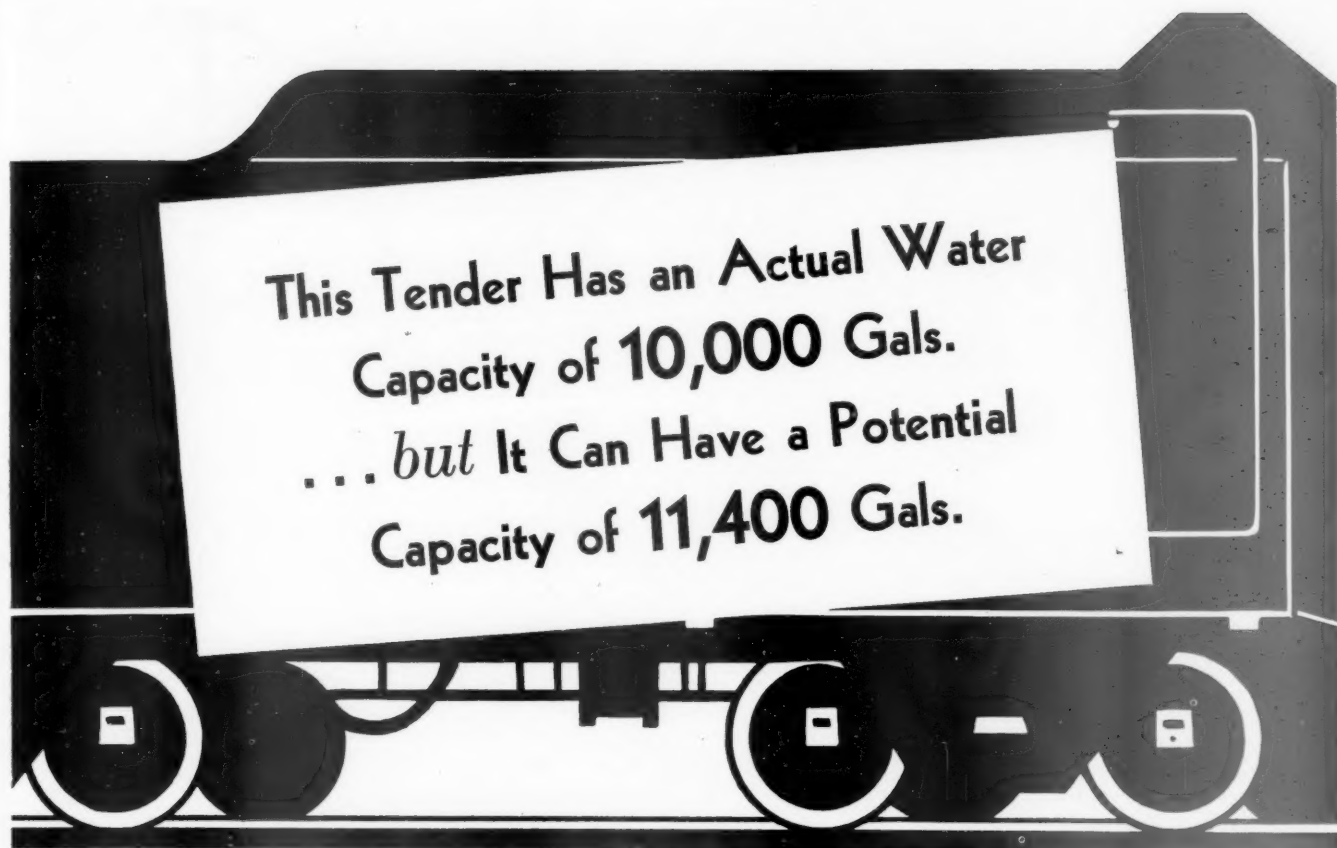
OPERATING

C. J. Crowley has been appointed superintendent of car service of the Boston & Albany, with headquarters at Springfield, Mass., as noted in the *Railway Age* of October 30. He entered the service of the Boston & Albany on March 17, 1913, as clerk in the office of the superintendent of car service. Becoming chief clerk on April 16, 1928, he was appointed superintendent of car service, effective November 1.

W. A. Catlett has been appointed trainmaster of the Memphis division of the Missouri Pacific, with headquarters at Wynne, Ark., to succeed **H. J. Hicks**, who has been transferred to the Gurdon, Huttig and Farmerville districts of the Louisville division, with headquarters at Monroe, La., to replace **G. W. Griffing**, who has been assigned to other duties. **F. E. Bromley** has been appointed trainmaster of the Northern Kansas division, with headquarters at Concordia, Kan., to succeed **L. H. Dillie**, who has retired.

Edward A. West, who has been appointed general manager of the Denver & Rio Grande Western, with headquarters at Denver, Colo., as reported in the *Railway Age* of November 6, has devoted his energies thus far to the electric traction and public utility fields. Following his graduation from Massachusetts Institute of Technology, he became associated with the Portland (Ore.) Light & Power Company. In 1916 he went to Denver to become associated with the Denver Tramway Company, where he advanced through various positions to that of general superintendent. In 1922 he resigned to go with the Utah Light & Traction Company, Salt Lake City, Utah, as general manager. He remained in Salt Lake City until early in 1937, when he accepted a position at Miami, Fla., as vice-president of the Florida Light & Power Company. He now leaves this connection to become general manager of the D. & R. G. W., effective November 15.

John Hewes, Jr., transportation assistant of the Baltimore & Ohio, with headquarters at Pittsburgh, Pa., has been appointed superintendent of the Newark division, with headquarters at Newark, Ohio, succeeding **C. G. Stevens**, who has retired after 52 years of service. **Paul L. Faustman**, on the staff of the general superintendent of transportation at Baltimore, succeeds Mr. Hewes as transportation assistant. Mr. Stevens was born on December 16, 1870, and entered the service of the Baltimore & Ohio at Sumner, Ill., on August 15, 1885, as clerk and operator, being operator at Sumner and clerk at Claremont. On November 27, 1889, he resigned from the B. & O. and became an operator for the Missouri, Kansas &



THIS additional capacity is provided by the return to the boiler of condensate from exhaust steam, which represents about 12% of the evaporation of the boiler. This has the effect of increasing the tender capacity by approximately 14%, and effecting a fuel saving of from 8%-12%.

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Texas (Missouri-Kansas-Texas) at Parsons, Kan., and became dispatcher with this road in June, 1890. In 1893 he was furloughed and returned to the Baltimore & Ohio as operator and extra dispatcher in the shops. He was promoted to dispatcher in August, 1895, becoming night chief dispatcher in 1902 and chief dispatcher in 1904. Mr. Stevens next became assistant trainmaster in 1910, and in 1911 he was appointed trainmaster, becoming superintendent of the former Illinois division at Flora, Ill., in 1917. He remained there until the Illinois and Indiana divisions were consolidated into the St. Louis division in 1922, continuing as division superintendent with headquarters at Washington, Ind. On November 1, 1929, he was transferred as superintendent to the Newark division, with headquarters at Newark, Ohio.

James E. Henderson, trainmaster on the Chicago, Rock Island & Pacific at Des Moines, Iowa, who has been promoted to superintendent of the Arkansas division, with headquarters at Little Rock, Ark., as reported in the *Railway Age* of October 30, has been identified with this company for more than 36 years. He was born on September 6, 1880, at Gilmer, Tex., and after a public school education he attended business college at Nocona, Tex. On April 3, 1901, he entered railway service with the Rock Island, serving as an agent-telegrapher at various stations until 1905. In



James E. Henderson

that year he was advanced to assistant trainmaster, with headquarters at Amarillo, Tex., and from January to September, 1907, served as a transportation clerk in the office of the general superintendent at Fort Worth, Tex. At the end of this period Mr. Henderson was made chief dispatcher at Amarillo, and in May, 1912, was transferred to Haileyville, Okla., where he served until October, 1918, when he was promoted to trainmaster. Mr. Henderson served in this capacity on various divisions until his appointment as superintendent of the Arkansas division, which was effective on November 1.

G. W. Groom, superintendent on the Central Vermont, with headquarters at New London, Conn., has retired on pension and the position of superintendent at New London has been consolidated with that of superintendent at St. Albans, Vt.

T. W. Prior, assistant superintendent at St. Albans, has been promoted to superintendent, with system jurisdiction. **R. E. Chesney**, general agent at Rouses Point, N. Y., has been appointed assistant superintendent, with headquarters at New Lon-



T. W. Prior

don and **C. C. Clarke**, transportation inspector at St. Albans, has been appointed assistant superintendent, with headquarters at White River Junction, Vt. The offices of car service agent and car accountant have been consolidated and **C. W. Moore**, car accountant, has been appointed superintendent of car service. **C. L. Earle**, chief dispatcher at St. Albans, has been appointed rules examiner, safety-first and fire prevention representative and **R. J. Sweeney**, dispatcher, has been appointed chief dispatcher, northern division. **A. E. Bond**, chief dispatcher at New London, has been appointed also yardmaster and **C. C. Kellogg**, general agent at St. Albans, will also serve as stationmaster there.

Mr. Groom was born at Rossville, Ill., on August 26, 1872, and attended Northern Illinois Normal School, Dixon, Ill. He entered the service of the Chicago & Eastern Illinois in 1889, as telegraph operator. From 1898 to 1908 he was train dispatcher for the Pennsylvania at Buffalo, then serving until 1912 as dispatcher for the Central Vermont at St. Albans. From 1912 to 1916 he was chief dispatcher and from 1916 to 1923, assistant superintendent for the Central Vermont. In 1923 Mr. Groom was appointed superintendent, Central Vermont, at St. Albans, being transferred to New London in the same capacity in 1932.

Mr. Prior was born in Chicago and entered railway service in March, 1906, as a messenger boy with the Central Vermont. In December, 1906, he was promoted to telegraph operator and until December, 1909, was stationed at various points along the Central Vermont. He then entered Vermont Business College and returned to work as an operator in April, 1911. In October, 1912, Mr. Prior was promoted to train dispatcher and in November, 1920, was appointed night chief dispatcher. He was promoted to trainmaster on the Central Vermont's northern division in January, 1925, and became assistant superintendent in January, 1929, the position he held until his recent appointment as superintendent with system jurisdiction.

TRAFFIC

George Palma, passenger representative of the St. Louis-San Francisco, has been promoted to district passenger agent, with headquarters at New York.

J. F. Griffiths has been appointed general agent on the Kansas City Southern at Kansas City, Mo., to succeed **E. J. Glaeser**, who has been transferred to New York, where he replaces **Charles P. Hoch**, whose appointment as assistant freight traffic manager, with headquarters at Kansas City, Mo., was reported in the *Railway Age* of November 13.

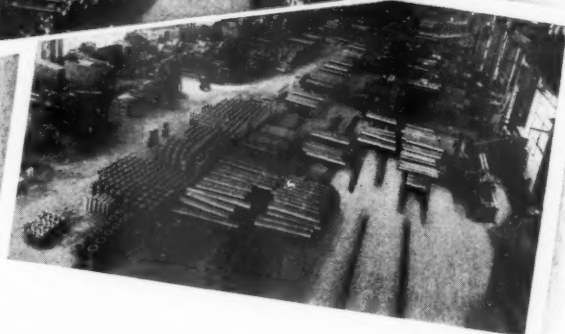
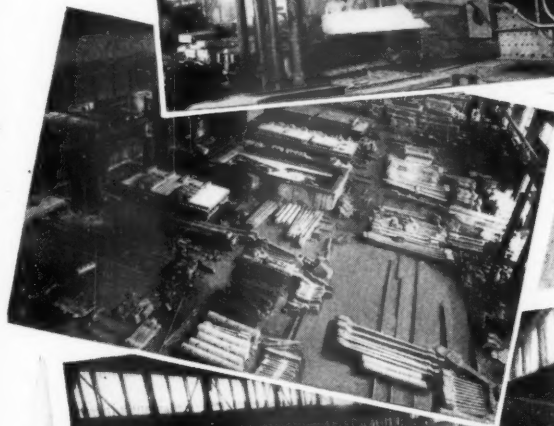
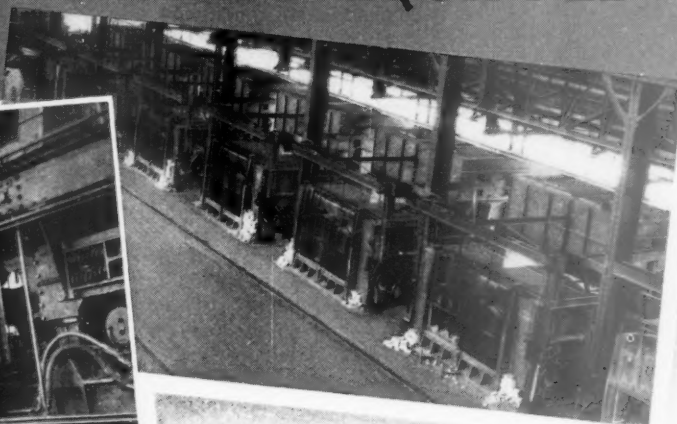
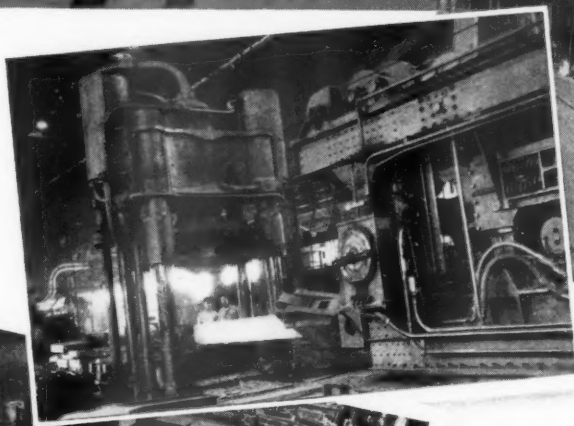
E. E. Pierce has been appointed general passenger agent of the Boston & Albany, with headquarters at Boston, Mass., as noted in the *Railway Age* of October 23. Mr. Pierce was born on September 7, 1890, at Hazardville, Conn., and entered the service of the Boston & Albany on February 18, 1911, as ticket clerk at Springfield, Mass. On May 11, 1916, he became city ticket agent at Springfield and on July 27, 1918, he was appointed clerk in the passenger traffic department at Boston. He became traveling passenger agent at Boston on April 1, 1926, and assistant general passenger agent there on June 15, 1929, the position he held until his appointment as general passenger agent, effective November 1.

C. A. Kline, assistant passenger traffic manager of the Southern system, with headquarters at Washington, D. C., will retire on December 1, after 40 years of service. **F. N. Westerman**, general passenger agent, has been appointed assistant passenger traffic manager, with headquarters as before at Washington, D. C. **E. E. Barry**, assistant general passenger agent at New York, has been appointed assistant passenger traffic manager, Washington, D. C. **R. H. Hamilton**, assistant general passenger agent, has been appointed general passenger agent, with headquarters as before at Washington, D. C. **C. T. Hunt**, general eastern passenger agent at New York, has been appointed assistant general passenger agent at Atlanta, Ga. **G. M. Lawrence** has been appointed general eastern passenger agent at New York. **F. K. Brown** has been appointed district passenger agent at Washington, D. C., and **R. A. Matheson**, traveling passenger agent there. The above appointments will become effective December 1.

Robert E. Burns, who has been appointed general traffic agent of the New York, New Haven & Hartford, at New York, as noted in the *Railway Age* of November 6, was born on July 16, 1891, at Keokuk, Iowa. He attended public school in New Haven, Conn., and Yale Business College and entered the service of the New York, New Haven & Hartford in June, 1907, as office boy in the general traffic department, later being advanced to clerk. In 1912 he was transferred to the mechanical department as stenographer and entered the traffic department in 1913 as stenographer in the vice-president's office. In the latter part of 1914 he went to the Boston & Maine in the president's office.

Why

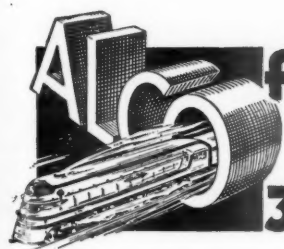
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Mr. Burns returned to the New Haven in January, 1916, serving in the office of the vice-president in charge of traffic at New Haven, subsequently becoming stenographer, secretary and chief clerk to the vice-president. In December, 1930, he was appointed general traffic assistant and on June 15, 1934, became assistant general traffic agent at New York, which position he held until his recent promotion to general traffic agent.

Charles P. Hoch, general agent for the Kansas City Southern at New York, who has been appointed assistant freight traffic manager with headquarters at Kansas City, Mo., as reported in the *Railway Age* of November 13, was born on June 3, 1888, at Newark, N. J. He first entered the service of the Kansas City Southern as a clerk in the traffic office at New York, and has spent all his service with the K. C. S. at that point except for about two years during which he served as soliciting freight agent at Beaumont, Tex. On February 1, 1914, he returned to New York as traveling freight agent, remaining in that position until the outbreak of the World War, when he enlisted in the



Charles P. Hoch

United States Navy. After the termination of the war Mr. Hoch re-entered the service of the Kansas City Southern at New York, being appointed general agent on January 16, 1920, which position he continued to hold until his recent promotion to assistant freight traffic manager.

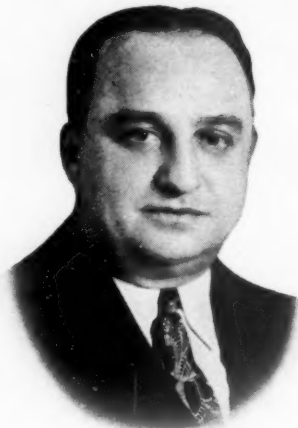
MECHANICAL

Howard P. Perry has been appointed master mechanic of the Lehigh & Hudson River, succeeding **Fred Jackson**, deceased.

W. G. Wilson has been appointed master mechanic of the Illinois and Missouri divisions and the DuPo terminals of the St. Louis Terminal division of the Missouri Pacific and of the Missouri-Illinois Railroad (a subsidiary of the Missouri Pacific), with headquarters at DuPo, Ill., to succeed **W. C. Smith**, who has retired.

Otto Jabelmann, assistant general superintendent of motive power and machinery of the Union Pacific, with headquarters at Omaha, Neb., has been appointed to the newly-created position of assistant to

the president in charge of research. A native of Cheyenne, Wyo., Mr. Jabelmann started service with the Union Pacific in 1906 at the age of 16 as a caller in the



Otto Jabelmann

enginehouse at that point. He has been continuously in the service of this company since that time, with the exception of three years during which he attended the University of Michigan. Advancing through various positions in the mechanical department, he was appointed superintendent of shops of the Union Pacific Railroad in 1925. Eight years later he was further promoted to assistant general superintendent of motive power and machinery of the system, which position he was holding in 1936, when, with the same title, he was placed in charge of the Union Pacific's newly established research bureau. Work that has been carried out under the supervision of Mr. Jabelmann includes the design of this company's various streamliners, the turbine-electric locomotive which is now nearing completion, the new 5400 hp. Diesel-electric locomotives, the light-weight Challenger trains, light-weight freight cars, new lighting and air-conditioning methods, etc.

ENGINEERING AND SIGNALING

R. K. Johnson, supervisor of signals and water supply of the Chesapeake & Ohio, with headquarters at Peru, Ind., has been appointed supervisor of reclamation, with headquarters at Barboursville, W. Va., succeeding **Walter Constance**, who died on September 10.

E. Weidemann, office engineer in the office of the chief engineer maintenance of way of the Western region of the Pennsylvania, has been appointed to the newly created position of engineer of bridges and buildings in the office of the chief engineer of the Western region, with headquarters as before at Chicago.

OBITUARY

Clarence Morgan, treasurer of the Rutland from 1902 to 1904, died on November 16 at the Hotel Beaconsfield, Brookline, Mass. He was 66 years old.

J. J. Maginn, superintendent of motive power of the New York, Chicago & St.

Louis, with headquarters at Cleveland, Ohio, died on November 13.

Philip J. Harkins, who retired in 1911 as secretary and assistant treasurer of the Chicago, Indianapolis & Louisville at New York, died on November 17 at his home in Elizabeth, N. J.

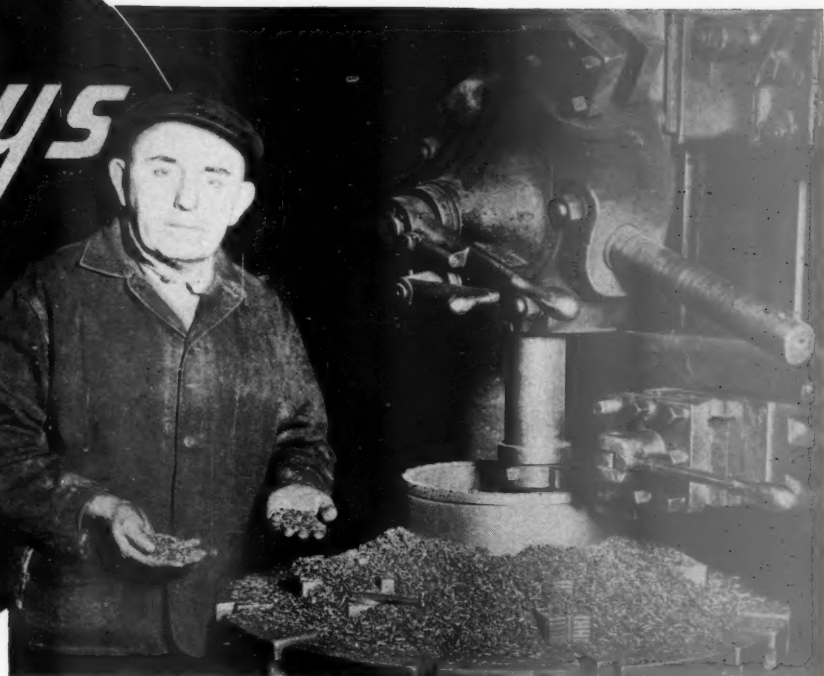
Frank M. Marsh, who retired in 1902 as chief engineer of the Fremont, Elkhorn & Missouri Valley (now part of the Chicago & North Western), died on November 9 at Ontario, Calif., at the age of 87 years. A native of Dubuque, Iowa, Mr. Marsh entered railway service at an early age and served in engineering capacities on both construction and maintenance, with the Sioux City & Pacific (now part of the C. & N. W.), the Iowa Falls & Sioux City (now part of the Illinois Central), the Sioux City & Pembine, the Chicago, Dubuque & Minnesota and the Chicago, Decorah & Minnesota (now part of the Chicago, Rock Island & Pacific). On February 1, 1898, he was made chief engineer of the Fremont, Elkhorn & Missouri Valley and of the Sioux City & Pacific, which positions he held until September, 1902.

Hudson J. Bordwell, a trustee of the New York, Susquehanna & Western, and former general manager of the Eastern district of the Erie, died on November 15 of a heart attack at his home in Jersey City, N. J. He was 51 years old. Mr. Bordwell was born on December 7, 1885, at Buffalo, N. Y., and entered the service of the Erie on July 1, 1902, as telegraph operator. From July, 1911, to May, 1913, he served as train dispatcher; from May, 1913, to June, 1914, as chief dispatcher; from June, 1914, to May, 1917, as chief clerk to superintendent and from May, 1917, to March, 1927, as trainmaster. On the latter date Mr. Bordwell became superintendent at Susquehanna, Pa., and from December, 1928, to June, 1929, served as assistant general manager of the Eastern district at Jersey City, N. J. He became general manager of the New York district in June, 1929, being appointed to the same position on the Eastern district on March 16, 1932. Mr. Bordwell was granted a year's leave of absence because of ill health in April, 1936, and returned to the Erie last April to do special work in the office of the vice-president in charge of operations. He was appointed a trustee of the New York, Susquehanna & Western in July of this year.

A PRELIMINARY AGREEMENT for construction of a new railway between northern Argentina and the cities of Santa Cruz de la Sierra and Sucre in Bolivia has been signed by representatives of the two countries. According to the plans, the new line will connect a branch of the Argentine State Railways, which now ends about 25 kilometers (15 miles) north of Yacuiha, with Santa Cruz de la Sierra, Bolivia, and with a branch to Sucre. Studies on the project are to be in charge of an Argentine-Bolivian mixed commission working under the direction of the Argentine State Railways.

Table of Operating Revenues and Expenses appears on next left-hand page

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Operating Revenues and Operating Expenses of Class I Steam Railways

Compiled from 137 Monthly Reports of Revenues and Expenses Representing 141 Class I Steam Railways

FOR THE MONTH OF SEPTEMBER, 1937 AND 1936

Item	United States		Eastern District		Southern District		Western District	
	1937	1936	1937	1936	1937	1936	1937	1936
Miles of road operated at close of month.....	235,304	236,117	58,139	58,439	44,773	44,891	132,392	132,787
Revenues:								
Freight	\$293,810,851	\$291,631,832	\$116,457,812	\$119,494,766	\$55,054,798	\$55,526,137	\$122,298,241	\$116,610,929
Passenger	38,734,466	36,340,472	21,771,144	20,892,531	4,585,975	4,378,719	12,377,347	11,069,222
Mail	7,825,482	7,688,110	3,035,644	3,008,366	1,312,899	1,282,944	3,476,939	3,396,800
Express	5,143,989	5,545,070	2,359,684	2,513,245	845,077	964,415	1,939,228	2,067,410
All other transportation...	8,156,614	7,623,276	3,951,313	3,824,901	1,108,681	870,986	3,096,620	2,927,389
Incidental	8,685,886	7,548,457	4,283,780	3,798,402	931,196	836,256	3,470,910	2,913,799
Joint facility—Cr.	1,013,776	921,803	323,283	299,879	145,662	176,946	544,831	444,978
Joint facility—Dr.	300,212	240,807	56,706	51,767	22,531	20,053	220,975	168,987
Railway operating revenues	363,070,852	357,058,213	152,125,954	153,780,323	63,961,757	64,016,350	146,983,141	139,261,540
Expenses:								
Maintenance of way and structures	45,349,166	42,086,989	18,158,472	16,273,193	7,238,142	6,899,721	19,952,552	18,914,075
Maintenance of equipment	68,772,596	66,386,688	30,299,742	30,399,101	12,721,345	12,283,992	25,751,509	23,703,595
Traffic	8,830,888	8,225,459	3,305,775	3,101,617	1,582,020	1,596,601	3,943,093	3,527,241
Transportation	125,853,695	116,168,525	55,569,750	51,733,364	19,703,412	18,528,657	50,580,533	45,906,504
Miscellaneous operations..	3,707,957	3,195,603	1,646,157	1,414,559	341,918	305,194	1,719,882	1,475,850
General	10,795,508	13,010,467	4,158,798	5,674,075	2,088,382	2,228,671	4,548,328	5,107,721
Transportation for investment—Cr.	598,113	623,799	87,943	110,966	95,171	119,058	414,999	393,775
Railway operating expenses	262,711,697	248,449,932	113,050,751	108,484,943	43,580,048	41,723,778	106,080,898	98,241,211
Net revenue from railway operations	100,359,155	108,608,281	39,075,203	45,295,380	20,381,709	22,292,572	40,902,243	41,020,329
Railway tax accruals.....	* 29,958,158	† 26,900,030	12,369,625	12,033,276	6,222,128	5,495,713	11,366,405	9,371,041
Railway operating income	70,400,997	81,708,251	26,705,578	33,262,104	14,159,581	16,796,859	29,535,838	31,649,288
Equipment rents—Dr. balance	7,960,419	8,223,734	3,324,176	3,343,353	† 350,977	† 92,445	4,987,220	4,972,826
Joint facility rent—Dr. balance	3,135,630	3,388,351	1,735,413	1,860,623	292,178	356,729	1,108,039	1,170,999
Net railway operating income	59,304,948	70,096,166	21,645,989	28,058,128	14,218,380	16,532,575	23,440,579	25,505,463
Ratio of expenses to revenues (per cent)	72.36	69.58	74.31	70.55	68.13	65.18	72.17	70.54
Depreciation included in operating expenses	16,566,879	16,116,347	7,339,262	7,056,533	3,142,058	3,169,118	6,085,559	5,890,696
Total maintenance before depreciation	97,554,883	92,357,330	41,118,952	39,615,761	16,817,429	16,014,595	39,618,502	36,726,974
Net railway operating income before depreciation ..	75,871,827	86,212,513	28,985,251	35,114,661	17,360,438	19,701,693	29,526,138	31,396,159

FOR NINE MONTHS ENDED WITH SEPTEMBER, 1937 AND 1936

Average number of miles operated	235,553	236,361	58,231	58,521	44,787	44,925	132,535	132,915
Revenues:								
Freight	\$2,580,806,687	\$2,384,016,968	\$1,094,316,775	\$1,016,485,053	\$495,471,298	\$467,614,615	\$991,018,614	\$899,917,300
Passenger	334,048,245	307,110,582	183,301,806	173,191,849	46,493,892	41,239,653	104,252,547	92,679,080
Mail	71,166,146	68,714,306	27,216,530	26,450,696	12,457,420	12,174,069	31,492,196	30,089,541
Express	43,584,569	42,058,267	17,908,781	16,850,102	9,073,619	8,779,988	16,602,169	16,428,177
All other transportation...	67,644,251	62,944,537	34,756,469	32,938,844	7,155,922	6,309,593	25,731,860	23,696,100
Incidental	70,749,596	58,356,837	35,648,444	30,552,778	9,309,791	7,970,605	25,791,361	19,833,454
Joint facility—Cr.	9,036,109	8,304,904	2,781,428	2,569,869	1,803,619	1,828,094	4,451,062	3,906,941
Joint facility—Dr.	2,394,014	2,151,219	504,102	471,015	206,512	196,077	1,683,400	1,484,127
Railway operating revenues	3,174,641,589	2,929,355,182	1,395,426,131	1,298,568,176	581,559,049	545,720,540	1,197,656,409	1,085,066,466
Expenses:								
Maintenance of way and structures	382,810,988	342,980,238	150,502,608	131,616,040	65,609,290	60,631,644	166,699,090	150,732,554
Maintenance of equipment	631,032,894	577,359,489	286,017,512	260,626,235	113,387,821	105,724,432	231,627,561	211,008,822
Traffic	78,743,757	74,420,005	29,046,552	27,639,073	14,776,631	14,380,287	34,920,574	32,400,645
Transportation	1,124,850,179	1,028,692,044	506,284,773	470,611,923	182,734,926	169,146,980	435,830,480	388,933,141
Miscellaneous operations..	30,949,837	26,379,225	13,675,053	11,839,561	3,803,513	3,155,261	13,471,267	11,384,504
General	111,614,325	117,450,423	46,935,108	51,614,451	20,191,636	19,964,181	44,487,581	45,871,791
Transportation for investment—Cr.	3,944,449	3,599,436	587,825	420,837	583,510	583,862	2,773,114	2,594,737
Railway operating expenses	2,356,057,531	2,163,681,988	1,031,873,785	953,526,345	399,920,307	372,418,923	924,263,439	837,736,720
Net revenue from railway operations	818,584,058	765,673,194	363,552,346	345,041,831	181,638,742	173,301,617	273,392,970	247,329,746
Railway tax accruals.....	† 251,604,812	† 231,707,583	113,704,611	98,327,221	54,105,648	47,412,755	83,794,553	85,967,607
Railway operating income	566,979,246	533,965,611	249,847,735	246,714,610	127,533,094	125,888,862	189,598,417	161,362,139
Equipment rents—Dr. balance	71,105,328	70,113,336	30,033,537	32,030,364	3,154,356	2,986,615	37,917,435	35,096,357
Joint facility rent—Dr. balance	27,424,879	29,369,540	15,265,917	16,016,276	2,867,944	3,555,886	9,291,018	9,797,378
Net railway operating income	468,449,039	434,482,735	204,548,281	198,667,970	121,510,794	119,346,361	142,389,964	116,468,404
Ratio of expenses to revenues (per cent)	74.21	73.86	73.95	73.43	68.77	68.24	77.17	77.21
Depreciation included in operating expenses	146,884,342	145,157,859	65,114,586	63,269,492	28,150,482	28,676,249	53,619,274	53,212,118
Total maintenance before depreciation	866,959,540	775,181,868	371,405,534	328,972,783	150,846,629	137,679,827	344,707,377	308,529,258
Net railway operating income before depreciation ..	615,333,381	579,640,594	269,662,867	261,937,462	149,661,276	148,022,610	196,009,238	169,680,522

* Includes charges under the requirements of the Social Security Act of 1935 in the total amount of \$3,432,988; also includes charges and credits resulting in a net charge of \$3,332,544 because of provisions of the "Carriers Taxing Act of 1937," approved June 29, 1937, and repeal of the Act of August 29, 1935, levying an excise tax upon carriers and an income tax upon their employees, and for other purposes (Public No. 400, 74th Congress). The charges and credits were not handled in a uniform manner by all the carriers, and separate totals are not available.

† Includes charges in the total amount of \$5,330,074, itemized as follows: \$1,449,185 for taxes under the requirements of the Social Security Act of 1935 and \$3,880,889 under the requirements of an Act approved August 29, 1935, levying an excise tax upon carriers and an income tax upon their employees, and for other purposes (Public No. 400, 74th Congress).

‡ Includes charges under the requirements of the Social Security Act of 1935 in the total amount of \$29,645,708; also includes charges and credits resulting in a net charge of \$16,227,965 because of provisions of the "Carriers Taxing Act of 1937," approved June 29, 1937, and repeal of the Act of August 29, 1935, levying an excise tax upon carriers and an income tax upon their employees, and for other purposes (Public No. 400, 74th Congress). The charges and credits were not handled in a uniform manner by all the carriers, and separate totals are not available.

§ Includes charges in the total amount of \$40,388,837, itemized as follows: \$13,113,727 for taxes under the requirements of the Social Security Act of 1935 and \$27,275,110 under the requirements of an Act approved August 29, 1935, levying an excise tax upon carriers and an income tax upon their employees, and for other purposes (Public No. 400, 74th Congress).

¶ Deficit or other reverse items.

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.